Denver Law Review

Volume 32 | Issue 5 Article 8

1955

Vol. 32, no. 5: Full Issue

Dicta Editorial Board

DICTA

VOLUME 32

1955

The Denver Bar Association

The Colorado Bar Association

The University of Denver College of Law

1955

DICTA

Published bi-monthly by the Denver Bar Association, the Colorado Bar Association, and the University of Denver College of Law.

SUBSCRIPTIONS AND CONTRIBUTIONS: 525 Mile High Center, Denver 2, Colorado, AComa 2-9421.

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Volume XXXII, Number 5, July-August, 1955

HAVE YOU PAID YOUR DUES?

RADAR EVIDENCE IN THE COURTS

By PHILIP J. CAROSELL *of the Denver Bar*
and
WILLIAM C. COOMBS* *of the Denver Research Institute of the University of Denver*

Jones was found guilty of violating Section 507.2 of the Traffic Code. The sole evidence against him was the result of a radar-meter speed check. This was obtained by the red line inscribed on graph paper by a stylus actuated by the return of microwave energy bouncing off the reflective surfaces of the target vehicle into the police radar receiver. In a fraction of a second, the stylus had delineated a line-trace to a peak speed reading of 38 m.p.h. in a 30 m.p.h. zone. At the time, Jones was driving a five months' old 1955 Oldsmobile, and his speedometer was seen to read about 28 m.p.h. Three other target vehicles were within the same 175 feet radio beam at the time the instrument record was made.

The above finding, repeated many times daily in some 42 states now using some variation of the radar-speed meter, is plainly very significant and presents a number of interesting and difficult questions.

I. WHAT IS RADAR AND ITS PRACTICAL APPLICATIONS AND LIMITATIONS?

The difficult questions of admissibility, entrapment, judicial notice, hearsay, prima facie evidence, and related problems, which are thus presented will be dealt with by touching upon them either directly or impliedly as we go along. We have placed our major effort in technical explanations, for obvious reasons. We deem it a compelling necessity, instead of reciting rules of evidence, presumably known by our readers, to devote most of this presentation to piercing the barrier of specialized information that seems to have resulted in a paralysis of thought afflicting the courts, lawyers, policemen, and laymen alike, when confronted with the name "Radar". The aura of mystery surrounding this harnessed cosmic force has produced confusion and helplessness because incomplete dissemination of information has left the public with the mistaken notion that an instrument of unerring and unchallengeable accuracy is involved.

Compare the radical departure from the orthodox trial, wherein demonstration of personal integrity of the motorist and open-minded reception to argument by the court gave the motorist at least the fighting chance to rely on the truth as he saw it for upholding his presumption of innocence; as against the "new" con-

* Graduate Electronics Engineer, presently Section Head, Electronics Division, engaged in Classified Electronics Research; formerly Supervisory Head, Radiation Measurements Laboratory, Southwest Research Institute, San Antonio, Texas; Research Associate in Guided Missiles, Boeing Airplane Co.; Engineer-in-Charge, Radio Direction Finding Section, Countermeasures Branch, Electronics Division, U. S. Navy, Bureau of Ships, Wash., D. C.; Radio Development Engineer, Colonial Radio Corp., Buffalo, N. Y.

sternation the motorist experiences when a "Radar-Cop" speed-meter, advanced to roles of an instrumental Judge, Jury, and Prosecutor, is used to dominate him and subjugate anything he might say. Whereas, all the while, it is only the too-ready police *interpretation* of the instrumental record and a mistaken aura of radar infallibility that makes up the shell of positive assertion arguing *conclusively* for the radar patrol officer.

Radar was shrouded in secrecy during World War II, and like the atom bomb, captured the imagination of the American people. This was natural because the secrecy surrounding it allowed it to be known only in terms of wondrous tales of performance in applications of military target tracking, missile guidance, strategic bombardment of enemy targets, and as an aid to ship and airplane navigation. The war-time reputation of radar has created an impression, through name alone, of such perfection in design or performance integrity, that psychologically everyone is impressed. The Courts, among others, have ascribed to it miraculous powers that never would be tolerated or given unquestioned acceptance in instruments not associated with the magic name of "Radar". Unfortunately, the attributes of the great instruments of war-time repute are not reflected in all of the civilian applications which have hitched a free ride to a great reputation. Let us illustrate:

A.—*How the Public and Courts are Misled*

In the July, 1955, issue of *Car Life Magazine* under the title *"Radar—The Silent Patrolman"* we find these statements, explaining the *principle* of operation of the radar speed-meter:

> The radar set emits signals at regular intervals. For the sake of clarity, let's assume that it sends out waves each tenth of a second . . . the transmitter (Tx) sends a beam which is reflected from the oncoming automobile back to the receiver (Rx). The set electronically records the distance from the set to the car at 89.87 feet. One tenth of a second later, another beam hits the car and bounces back and the distance then is recorded at 80.31 feet . . . Using the formula to determine speed by time over a given distance, the radar stylus is activated and moves across the paper to show a speed of 65 m.p.h To avoid hitting other objects ahead of or behind you, the beam is adjusted to operate in a narrow zone . . . If it can be used to direct shells against enemy aircraft at 30,000 feet with startling accuracy, you'd best accept our word that it can nail you for speeding.

Actually, these excerpts quite satisfactorily explain the nature of range measurement in typical military *pulse* radar used in mapping or guidance applications. But, this explanation is completely invalid when applied to police doppler radar speed-meters. Analysis of the police instrument and testimony produced under both

direct and cross-examination during the Denver trials proved beyond dispute, with final acceptance on both sides, that contrary to the above-cited principles of operation, the police set (1) Does *not* emit signals at regular intervals, but continuously (that is, it is not *"pulse"* radar but *continuous wave* "doppler" radar); (2) Does *not* electronically record the distance from the set to the car; (3) Is *incapable* of measuring either *time* or *distance,* and therefore; (4) Does *not* determine speed by formula or otherwise from *time* and *distance* relationships; and (5) Does *not* use a narrowly adjusted beam to avoid hitting other objects ahead or behind, but uses a beam 20° *wide,* which lumps into common reception *all objects* out to a nominal distance of at least 175 feet.

Is evidence to be considered fair when derived from an instrument that has been called "radar", when the whole hitherto unchallenged concept of its operation has been so erroneous as to receive nation-wide acceptance along the lines of the above delusion?

Instead of the above principle of characteristic radar action, the police instrument operates on the entirely different principle that when a target is moving, the reflection of a radio wave impinging on its surface shifts in *frequency* from the transmitted signal, due to motion of the vehicle, and this *frequency difference* is correlated to the proportionate velocity of the reflecting surface. This opens up a very different set of requirements to be observed in instrument design to make it initially capable, and to preserve this capability, of accurately representing velocity under the diverse conditions encountered on streets and highways.

When the very *concept* of operation is so completely erroneous or, similarly, when ex-military radar "experts" having only military operational experience instead of actual *design* acquaintance, use their operational experience to endorse anything that is called "radar", we see how dangerous it is for Courts and juries to accept "police radar" on faith and opinionated testimony of apparently reputable witness instead of verifiable facts dealing with the instrument itself.

B.—*Technical Description of Radar and Evidence Thereon*

What, exactly is RADAR? The official derivation of the coined word "Radar" is that it comes from the descriptive phrase, "Radio Detection And Ranging". The same definition source [1] states that it would be more descriptive to make the phrase "radio direction-finding and ranging," for the *direction* and the *range* of objects in its field of view are the two basic qualities radar has to offer.

The police "radar" set measures *neither direction nor range* of target vehicles within its field of view and therefore does not even fit this definition of radar. Rather, it belongs to a wide category

[1] Official U. S. Government Publication: *Report on Science at War*, published by Joint Board on Scientific Information Policy for Office of Scientific Research and Development, Army and Navy Departments.

of different function instruments that have been called "Radar" simply because they happen to use a principle of reflected radio waves. This principle of itself has nothing to do with *accuracy*. Just as with any other kind of echo or reflection, the measurement may be made accurately or inaccurately, depending on the *design integrity* of the instrument used to make the measurement. There are many kinds of "Radar," and the integrity belonging to one category of design and purpose cannot arbitrarily be ascribed to all "Radars". Moreover, the vast expenditures for research and development of military radar, which in practical application requires a complex organization of highly trained personnel for proper operation, does not allow us to infer a corresponding integrity of research and development for police radar sets, compromised in design and operated as they are by relatively untrained personnel.

We must further note that the military systems are dominantly *pulse* radar, whereas the police radar instrument uses a *continuous-wave* or *c-w* system. Thousands of times as much work has gone into *pulse* radar as into *any other kind*, and the overwhelming majority of this work has been concerned with microwave-pulse radar, not continuous-wave radar. Thus, the perfection of military systems, derived from great research and development expenditures, amounting to hundreds of millions of dollars,[2] cannot arbitrarily be ascribed to the police systems of different design and different functional use.

Referring particularly to *c-w doppler radar* (which is the kind used in police sets), Reference 3 warns that quantative information is lacking on various points, even on important ones: ". . . adequate information simply is not available. This situation and others like it are the result of the fact that very little research has been done on *c-w* systems in comparison with that devoted to *pulse* systems."[3] Yet, the police system is just such a *c-w* system.

Besides lack of research in continuous-wave radars, economic and practical factors also bear on the accuracy which can be built into an instrument. For war use, national security justified production of equipment to perform a needed service without primary regard for the number of operators required or the overall *cost* of the service. In peacetime application, however, cost and inconvenience factors of use must be considered and necessary compromises of design may not be readily found, or may leave the instrument with a lower standard of accuracy and reliability.[4]

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[2] *Radar System Engineering*, Radiation Laboratory Series, Vol. 1, Pages ix, 3, and 131. Edited by Louis N. Ridenour, Professor and Dean of the Graduate College, University of Illinois, under the Radiation Laboratory, Massachusetts Institute of Technology. The twenty-eight volumes of this series are rated the outstanding technical publication in this field. Therefore, frequent references will be made herein to this series, as well as other authorities of unquestioned integrity. NOTE: Hereafter Vol. 1 of the series, entitled Radar System Engineering will be referred to as R.S.E.

[3] R.S.E., Chapter 5, Page 131. See 2, above.

[4] *Encyclopedia Americana*, 1953 Ed., Vol. 23, Page 115.

Limitations of physical *size, cost, weight,* and *engineering expediency* are all capable of influencing the design of radar in ways that will leave it without accuracy or flexibility required for unquestioned reliance thereon.[5]

For the first time in any Court, as found from a study by the defense of the comparatively few reported cases on this subject,[6] the "Radar Trials" of Denver proved indisputable existence of specific compromises in governing physical principles of operation, as applied in the police instrument. This was shown first through cross-examination of the city's own expert in the *first* trial, this trial resulting in a mis-trial when the Judge ruled he was prejudiced by false newspaper reporting when the witness was quoted as stating the instrument indicated true velocity; whereas, the witness had actually agreed, among other points, that the police radar "compounded confusion" when more than one target enters the view of the radio beam.

When, in the *second* trial, the city avoided calling back their expert witness of the first trial, the defense summoned a second expert witness from the same Research Institute as the first, who cited specific design details and world-recognized authorities in support of proof that specific compromises in design existed in the instrument, and that principles of operation were themselves compromised by manner of use. This testimony was never challenged. When some 23 limiting factors were summarized as adversely affecting the accuracy of the police radar sets, the city attorney affirmed to the Judge that he *accepted* testimony as to the existence of these limiting factors, in principle.

Moreover, no challenge was made against the defense expert's quoted authority (cited later in this paper) that it is not *possible* to determine whether an observed radar indication is in fact due to radar signal or noise, or even to determine the *probability* that it is signal and not noise, without duplicating the complete and innumerable circumstances attendant *to each condition of observation* in controlled tests.

This controlled scientific test would require re-constructing the entire roadway, reproducing all the conditions of radio-wave reflection from still and moving objects, re-establishing identical placement and movement of all vehicles in the traffic situation at the precise moment the recording was made, and comparing the recorded instrument velocity with the true velicity established by independent means, in completely controlled observations. Yet, this impracticable if not impossible condition is the burden of proof implicitly placed on the *motorist* when a Judge rules that an acquittal would require that the instrument be proven in ex-

[5] *The Journal of Architecture, Engineering, and Industry,* Vol. 9 (1948), Page 12, by Frederick E. Brooks, Jr., Professor of Engineering, University of Texas.

[6] *Traffic Digest and Review*, Traffic Institute, Northwestern University, February, 1954.

cessive *error* at the particular *time, place,* and *circumstance* of each alleged violation.

Notwithstanding this burden of proof that would be placed on the motorist, when a defense expert witness appealed to the manufacturer for test information deemed by the latter to establish the claimed 2 m.p.h. accuracy of the police-radar instrument, his request was denied. Nor has anybody else disclosed any controlled laboratory measurements to support the claimed accuracy limits of the instrument.

On the other hand, similarly being in no position to re-construct the circumstances of past events in controlled tests, the city's expert in the Denver trials had only to testify from what was "told to him" by others, less trained in electronics than he, as to the "circumstances" under which the speed checks were made, "how" the sets were operated, "what" they "understood" happened, and his own "understanding" of operation as derived from a manual of operations provided by the manufacturer of the set.

This is a serious hearsay problem, particularly since, as we shall expand on later, it is the nature of radar that no expert can testify, even from personal knowledge, that field and laboratory tests of a police radar set made at one time and circumstance necessarily mean that at a different *time* and *circumstance* of alleged violation the instrument reliably checked the speed of a motorist. For an instrument of such caracteristics, it is clearly unscientific and inadmissible to permit the conclusion that because a police radar set—not necessarily the one used in checking the violation—was found reliable under ideal laboratory conditions and circumstances, it can be "assumed" to accurately reflect the actual situation at issue. Even less admissible is expert opinion which accepts unquestioningly the non-disinterested "word" of a manual of operations, written by the *manufacturer* of the equipment, and devoid of the necessary supporting scientific data for proper evaluation. Obviously, the asserter of a fact is not in the equivalent position of the person in actual possession of the fact asserted, because in the absence of the person with actual knowledge and personal experience thereof, he cannot be cross-examined as to the grounds for the fact asserted nor his qualifications to make it.[7]

C.—*Police Doppler Radar Set*

Perhaps the most vital fact that would have to be established in Court before it could properly be decided that a given police radar instrument is in fact accurate is that the short-time frequency stability of the instrument lies within proper limits. The reason for this is that the police type of instrument determines vehicular velocity by the frequency shift the motion of the vehicle causes in the transmitted wave, and anything that causes the transmitted beam *itself* to shift in frequency will result in a velocity indication

[7] Ingles v. People, 90 Colo. 51, 6 P. 2d 455; Carter v. People, 119 Colo. 342, 204 P. 2d 147.

just as surely as the doppler shift produced by a moving target vehicle. Likewise, any given vehicular velocity that is checked may be registered in excess of its true speed by an amount proportional to such frequency shift. No proper short-term frequency stability has been established in Court for the police instrument.

Moreover, substitute reliance upon a statement in the "Operating and Maintenance Manual" for the police radar set will mislead both the Courts and the police. This manual states:

> The transmitter oscillator has a high inherent frequency stability on the order of plus or minus 0.1%. If the frequency were to try to shift out of this range due to any changes in tube characteristics, etc., the cavity stability is such that it would render the oscillator inoperative. In practice, the oscillator is adjusted to within 1 megacycle of 2455 megacycles.

Indeed, in the Denver trials, the City cited laboratory test as confirmation of instrument compliance to these frequency limits, with implication that instrumental accuracy was confirmed thereby.

Since doppler radar speed indication accuracy is, indeed, dependent on frequency stability, the cited statement is readily seized upon by prosecution witnesses to impress the Court as a 0.1% accuracy specification; but in reality the statement connotes no such accuracy confirmation. What *does* this statement mean, insofar as any connection with instrumental accuracy of *velocity indication* is concerned? 0.1% of the 2.455 megacycles per second transmission frequency of the police instrument is 2.455 megacycles or 2.455.000 cycles. Now, when we recall that, in accordance with a verifiable figure cited elsewhere in the instruction book, each 7.31 cycles of doppler frequency shift corresponds to 1 m.p.h. velocity indication, we see that anything so gross as 0.1% stability is no error restriction at all, for a mere 731 cycles of short-term shift out of the total leeway of 2,455,000 cycles allowed by 0.1% frequency stability would alone correspond to *error* equal to the entire 100 m.p.h. velocity range of the instrument.

In reality, an accuracy as crude as plus or minus 1 m.p.h. would require a short-term frequency stability of 7.31/2,455,000,-000 or 0.000,000, 3%, not 0.1%. Thus, we see that a frequency stability guarantee of the order of plus or minus 0.1% does not begin to approach the order of stability required to connote accuracy of *velocity* indication, missing such factor by the order of 300,000 times. The 0.1% figure in reality only connotes conformance to channel frequency assignment, which is an altogether different matter.

Independent authority is cited which affirms the importance of short term stability in doppler radar and sets an even higher

frequency stability requirement for military use.[8] Attention is also directed to requirements for careful (design) attention to microphonics and power-supply filtering. We shall show later that police radar sets are *in fact* susceptible to microphonics. We also report, at this point, that a check-up with a major radio parts supply house revealed a demand in great quantities for the replacement of transmitter oscillator tubes for police radar sets because of the rapid rate at which such tubes deteriorate due to overheating. Variation in temperature is the most common cause of frequency instability in all electronics equipment and its consequences in a police radar set may be readily inferred from the above computations.

Upon examination of a police radar set one of the first things to catch trained eyes is the instrument's use of a single antenna for both transmission and reception of the radar waves. While this is common and proper practice in military *pulse* radar, where time multiplexing allows distinctive reception to take place *between* transmission *pulses*, the situation is entirely different in *continuous wave* radar of the police type. In the police instrument, transmission and reception of signal energy is not separated by pulse spaces, but takes place *simultaneously* through the same antenna. To use a single antenna under this condition is hazardous design practice because direct connection of the receiver detector with the transmitter power source tends to damage the crystal detector of the receiver, and makes it respond to extraneous modulation of the transmitter along with the difference frequency that corresponds to vehicular velocity. Exceptional design attention, not found in the police radar set, is required to render this modulation unobtrusive to the very weak reflected radar signal.[9]

In a police radar set, the simultaneous antenna function is accomplished by use of a bridge-like ring modulator of the type used, under different conditions, in telephone repeaters. However, this has been found to be hazardous design practice in a doppler system because it tends to introduce microphonic error. Use of two *separate* antennas, on the other hand, keeps the transmitter power modulation out of the receiver and avoids this trouble.[10]

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[8] R.S.E., Page 138. Under *Apparatus Considerations* for the simple doppler system, it is stated: "The most important consideration in doppler work is keeping the transmitter frequency modulation down . . . it should be noted here that short-time frequency stabilities of the order of a part in 10^{10} must be attained if the system is to work with full sensitivity in the presence of ground clutter. This requires careful attention to microphonics and to power-supply filtering." (Note that one part in 10^{10} is one part in ten billion or 0.000,000,01%.)

[9] R.S.E., Pages 132-3.

[10] *Id.*, Page 133. "It has often been suggested that a single antenna would be satisfactory if a bridge-like system were used similar to that used in two-way telephone repeaters. Ordinarily, however, the single antenna is not satisfactory. For one thing, the increased antenna gain resulting from greater available dish area is lost because of the power used in the 'artificial' antenna which balances the real one. More important, since very slight mechanical changes will spoil a 60-db balance between two equal voltages, such bridge systems tend to be highly microphonic."

Microphonic error susceptibility does, in fact, exist in the police radar set. This is easily demonstrated by striking a rod or surface in the proximity of the instrument. The mechanical vibrations alone will cause the instrument to respond with corresponding miles per hour indications just as surely as to a moving target vehicle within its radio range.

No further confirmation of this police radar design susceptibility to outside error sources is needed than the fact that the manufacturer has supplied musicians' type *tuning forks* for making quick checks on the meter calibration. Struck so as to produce only a barely perceptible hum or musical pitch, the tuning fork, when held a short distance in front of the instrument, will produce actual observable velocity indications on the meter corresponding to 50 m.p.h. or other calibration value, depending on the mechanical vibration *frequency* (not velocity as such), just as truly as though a traffic vehicle were approaching at high speed. Once this susceptibility (technically due to instrumental leakage modulation) is established, *the meter is known to be susceptible to erratic indication since it responds to other sources than car velocity.* The closing of the police car door, adjustment of the trunk lid, or the microphonism of the police radio, can send the meter shooting up to velocities exceeding the speed limit.

Moreover, while a doppler design might ordinarily be arranged to filter out very low and very high extraneous modulation frequencies, *any modulation at a frequency corresponding to the doppler frequency of the moving targets for which the system is designed cannot be filtered out without removing the desired target signal also.*[11]

Since the police instrument is required to cover a velocity range of zero to 100 m.p.h., it must remain responsive over the corresponding frequency range, so low frequency sources of disturbance from *at least* 0 to 731 cycles per second, as well as high frequency disturbances having any harmonic or modulation acceptance by the input circuit cannot be excluded from the system.

Amplitude modulation of the direct leakage signal from transmitter to receiver may be caused by power-supply hum, microphonics, fluctuation noise, intermittent contacts, etc. Barlow[12] computes that in a typical doppler system the modulation coefficient of the leakage carrier should be held to less than 4 parts in one million, and notes:

> This is an extremely difficult requirement to meet and necessitates extreme care in eliminating hum and microphonics. Voltage-regulated power supplies, shock-mounting, and acoustic shielding are needed. Care must be taken with the cooling of the transmitter output tube

[11] "Doppler Radar" by Edward J. Barlow, Sperry Gyroscope Company, *Proceedings of the Institute of Radio Engineers*, April, 1949, Page 352.

[12] *Proceedings of the Institute of Radio Engineers*, April, 1949.

to prevent an impinging air or water blast from introducing microphonics in the output.

The tube replacement problem in police radar sets, caused by overheating, has already been cited. Moreover, the police instrument exhibited in the Denver trials had no acoustic shielding and no anti-microphonism type of shock-mounting. While the instruction book indicated a tripod was initially available, which allowed the instrument to be set up outside the police car, such a tripod was not being used by the police, and mounting in the car made the instrument susceptible to vehicular vibrations. With respect to power supply, it is noted that the *Operating and Maintenance Instruction Manual* itself, under Paragraph 8, *Calibration and Test* states:

> Tube V208 in the output circuit relies on the balanced operation of its two sections for zero stability with respect to power input. The test for zero stability is made by varying the input line voltage between the limits of 105 and 125 volts. A tube should be selected which has less than 2 m.p.h. change of the zero reading over this range of input line voltage.

Thus, a leeway of 2 m.p.h. is accountable in this one tube alone with varying line supply voltage. The error leeway when operated from a continuously draining battery supply is not stated.

Another limiting factor of design in doppler radar instruments of the police type is receiver crystal noise, which noise operates to limit the signal sensitivity. This crystal noise increases with decreasing frequency and is enormous compared to thermal noise for *audio* frequencies, which includes the doppler frequency range from 0 to 731 cycles per second. To avoid this excess noise, normal good design practice is to introduce a local oscillator and amplify the signal at some normal intermediate frequency, 30 Mc/sec for example. At this higher frequency the excess noise is made negligible.[13]

The police instrument uses such a receiver crystal, but does *not* use a local oscillator to reduce the noise from the enormous proportion that occurs at low frequency. To obtain a quantitative indication of what this noise increase will be, we note that measurements made at the University of Pennsylvania, of the noise temperature in the video- and audio-frequency range, show that the noise temperature of a crystal converter increases as 1/f in the doppler range.[14] Taking the ratio of the cited 30 Mc (30 million cycles), where a local oscillator would be provided, to 219 cps (the latter being the doppler frequency corresponding to 30 miles per hour), by way of example, we obtain a ratio of possible in-

[13] R.S.E., Page 133.

[14] *Radiation Laboratory Series*, Vol. 16, "Microwave Mixers," Page 95.

crease in the crystal noise temperature of more than one hundred thousand times, as a result of the design omission of the local ascillator in the police instrument.

D.—*Propriety of Application*

Let us turn to the *propriety* of application of the doppler radar instrument in the police mode of use, both with regard to manufacturers' recommendations, and practices that have been adopted by the police.

First, let us note that, within certain limits of approved application, we raise no question about the accuracy that *can* be built into a doppler c-w radar system, any more than any other radar system, where there is no limit to effort and expense to overcome design deficiencies. Nevertheless, even then, it must be recognized that many of the precise measurements that may be cited for radar instruments, including doppler radar in military fields of use, depend not only on optimum *design* but *averaging processes* or highly complex mathematical computations applied after reading the radar indication, in order to obtain the high order of accuracy that may be credited to the instrument.

No such correction factors are applied to the police instrument because the instrument is not designed to register with such accuracy that mathematical correction would be practical or significant. The instrument, to begin with, does not even have a manufacturer's represented accuracy under plus or minus 2 m.p.h., notwithstanding the fact that police do not hesitate to read the instrument to a precise miles per hour without any expressed tolerance.

How does the police mode of application compare with authoritatively recognized limitations of radar? Radiation Laboratories sources state:

> Even the most advanced radar equipment can only show the gross outlines of a large object, such as a ship . . . Because of this grossness of radar vision, the objects that can usefully be seen by radar are not as numerous as the objects that can be distinguished by the eye. Radar is at its best in dealing with isolated targets in a relatively featureless background, such as aircraft in the air, ships on the open sea, island and coastlines, cities in a plain, and the like.[15]

The significance of this limitation of even the most advanced radar becomes pointed when compared with police use wherein radar patrol officers testify to using the recorded graph of the instrument to single out target vehicles traveling in common view with other cars in multi-lane traffic on the arterials and city streets —amid the most complicated and varying background of *clutter*

[15] R.S.E., Page 1.

one could imagine. Using equipment compromised in design to begin with, the police application is extended to areas not sanctioned in military equipment for the most advanced designs!

One commercial and military application of radar that has been cited in court in support of the police instrument, because of similar use of continuous wave (c-w) instead of pulse transmission, is the radar altimeter used in airplanes. But, this is completely invalid comparison because of the difference in conditions prevailing. In the case of the plane altimeter, there is but one target below the plane, namely the earth, and there is no other object in all the space between. This conforms to the proper conditions cited by Reference 15. Moreover, observations are made 100 times per second in typical radar altimeters, *to permit reduction of errors by averaging.*[16]

These are completely non-comparable circumstances to the street or highway speed radar where the target motor vehicle may typically lie in the same radar beam with utility poles, trees, sidewalk curbs, buildings, reflective pavements, and other vehicles, both stationary and moving. Moreover, the target *motor vehicle* not only has continually varying *distance* to the instrument but also continuous change in aspect *angle,* which produces a different velocity correspondence with each change of angle as the car passes to the side of the instrument. The reading therefore constantly *changes* instead of gaining emphasis through *coherence* or *averaging* of a relatively constant signal. This is so because the police *doppler* set responds to a *radial* velocity measured along lines between the target vehicle and the doppler instrument, off to one side; whereas, the velocity of *interest* is the true velocity of the car in its own direction down the street.

It is obvious from the above, and will be further established later in this paper, that besides being deficient in design, some of the fundamental areas in which police doppler radar cannot be given free sanction in *principle* and *physical* law include the very street situations in which they are being used. Accordingly, like the lie detector, such instruments must be deemed questionable as to admissibility as evidence. Since a trustworthy scientific basis is not adequately established for the police doppler speed-check, as presently constructed and operated, to otherwise justify the admission of results, such checks are not substantive evidence of anything.[17]

However, there are many *more* points that disprove propriety of application. Under cross-examination, a typical radar patrol

[16] R.S.E., Page 132.

[17] CONTRA, People v. Kitz, 129 N.Y.S. 2d 8 (1954); People v. Sarver, 129 N.Y.S. 2d 9 (1954); People v. Buck, 130 N.Y.S. 2d 354 (1954); State v. Dantonio, 105 A. 2d 918 (1954). But none of these cases is a Supreme Court decision, and in none of them was the evidence presented as herein outlined. All of them hold that such evidence, although admissible (provided the proper foundational requirements are met) is not conclusive, and the jury must determine its weight.

officer, fortified by his meager knowledge of radar, testified unequivocally that it is common practice to use the police radar set in multi-car and multi-lane traffic, and that offending cars traveling in groups of three are *unerringly* picked out! This would require, through a species of mental process, almost instantaneous interpretations of recorded graphs to reach such deductions in time to warn the arresting officer, read and assign license numbers to different inflections on a common graph recording, and *to ascribe accurate identification of the particular offending car*—all predicated on the instrument's ability to even make such distinction. At 40 m.p.h., a car enters and leaves the effective radar beam in the space of about 2 seconds.

Obviously, to establish such distinction of cars without question, in a very short time, requires that such instrument perform not only with almost absolute integrity, but that the governing principles allow such capability in the manner of application. This is, of course, if the stimuli-response processes of the officer himself are also at the same time operating with unerring efficiency.

Not even the instruction manual for such instruments gives unequivocal support to the radar officer's claimed ability to interpret the instrument record. Under the heading *Operation,* it is stated:

> When there are a group of vehicles within the operating range, and speed meter reads the speed of only one vehicle at a time. Among the factors determining the *selection* of a particular vehicle are its *speed, target area,* and *nearness* to the transmitter-receiver. In single lane approaches, the speed meter will *ordinarily* read the *nearest* vehicle. However, on a multi-lane highway, where a vehicle on one lane is traveling appreciably faster and passing a vehicle in an adjacent lane, this *faster* vehicle will be read on the meter, and also can be easily identified by the observer. The *increased sensitivity* to higher speeds is due to the speed meter being designed with a larger zone of operation for higher speed vehicles than for lower speeds. The stated range of the unit actually corresponds to speed of *40 to 50 miles per hour.* The operating zone is made sufficient for the needle of the indicator to reach its full value. (Emphasis ours)

Even this partial instruction book sanction to the aforesaid practices states that in single lane approaches the speed meter will only *ordinarily* read the nearest vehicle; because the *selection* of the offending car also depends on speed, target area, zone of operation, and whether or not the speed is in the range of 40 to 50 miles per hour. Since the word *ordinarily* carries its own refutation as to constancy, it is an admission the speed meter does NOT always read the nearest vehicle. Actually, as will be shown later

in this paper, the instruction book statement also does not adequately limit the true capabilities of the instrument.

Radar itself, even in its most efficient military application, is challengeable. The essentiality of complete integrity of instrument performance simply does not exist, such that any human can be unerringly certain of his deductions therefrom. Even if Courts should overlook the limitations of human capabilities in such situations, the principles of radar science show that outside influences (unless removed under rigidly controlled situations) dominate weaknesses in radar principles and cause erratic responses. Such weaknesses of radar are in fact exploited in the military science called *Radar Countermeasures,* whose primary *objective* is to cause enemy radar units to respond erratically.

E.—*The Achilles' Heel of Radar*

"The Achilles' Heel of Radar"[18] is a point of fundamental weakness in the radar principle. This weakness is manifest in the fact that the reflected "echo" energy coming back from a target is so small a fraction of the directly transmitted radar wave, that a host of extraneous *outside* sources of energy impinging *directly* (not as an echo) upon the radar receiver, may easily *exceed* the small radar "echo" energy corresponding to the intended target.

Associated with this echo sensitivity weakness is the fact that such instruments cannot distinguish the nature of small targets. One small object, capable of returning an echo, looks to the radar just about the same as another. To a radar, an airplane or a ship is a small object. It has been found that a number of thin metallic strips, cut to a proportional length to the wave length used by a radar, can return a remarkedly strong echo to that equipment.[19]

To fully appreciate the significance of the outside influence factor in the police instrument, it should be realized that the maximum rated out-going *signal power* from a typical police instrument is only two-tenths of *one watt;* and that only a minute fraction of even this small signal, measured in microvolts (millionths of 1 volt) comes back as the echo reflection from which the velocity is derived.

This vulnerability to outside influences is inherent to basic radar principles and can be alleviated only to limited degree by express intricate design complication for each known source. In civilian, as well as military use, outside noise influences may well be capable of dominating the response under conditions when there is not deliberate man-contrived exploitation, but only innocent noise or interference sources arising from common everyday surroundings.

This basic vulnerability is acknowledged in the instruction

[18] *Electronics Warfare, Report on Radar Countermeasures,* Joint Board on Scientific Information Policy, Office of Scientific Research and Development, United States Government Publication.

[19] *Id.*

manual for the police radar instrument. This manual cites conditions causing erratic zero of the indicator, as follows:

> 1. Movement of objects such as tree limbs, etc., in the field of the transmitter may produce enough signal to prevent a clean zero. 2. Neon or fluorescent lights in the field of the transmitter appear as moving targets, and may produce an unsteady zero. 3. A worn or hashy vibrator (K301) in the power supply may generate noise in the equipment or cause shifts of 2 or 3 m.p.h in the instrument zero. 4. In some cases the output of the 2C40 tube (V-101) may increase after the unit has been used for a few months. This condition causes too close coupling of the transmitter cavity to the transmitter antenna and appears as excess noise which may indicate on the meter.

It might be inferred from these instructions that disturbance may occur *only* near zero indication. This would be an erroneous assumption, however. The zero point merely happens to be the only point where the indication may be *checked* directly.

Nor does checking at zero give any assurance that the instrument is not susceptible to error from the same causes at a higher velocity indication. For, a direct correspondence does not exist to assure corresponding correction at higher traffic velocities where the instrument is *more sensitive!* The manual states: "The increased sensitivity to higher speeds is due to the speed meter being designed with a larger zone of operation for higher speed vehicles than for lower speeds. The stated range of the unit actually corresponds to speeds of 40 to 50 miles per hour." Also, under *Theory of Operation* it is stated that the circuitry is designed to prevent operation until a reasonable signal level is reached. Therefore, the extraneous noise sources may never be manifest at zero, *but only at a higher velocity indication when the indicator is activated by a passing vehicle*, or when the noise corresponds to *higher* and more *sensitive* velocity registration.

Likewise, the possible *noise error* is not restricted to so little as 2 or 3 m.p.h. For, the responsivity of the instrument to velocity is not primarily due to *strength* of returned signal, but rather to the *frequency* of signal from whatever source that is sufficiently strong to actuate the instrument. Extraneous noise can just as easily have a frequency correspondence to 50 m.p.h. as to 2 m.p.h. —more so, in fact, because the instrument is more sensitive to frequencies corresponding to the higher traffic velocities. Indeed, under the instrument's own theory of operation, a velocity of 1 m.p.h. will be derived for each 7.31 cycles per second of doppler frequency. This means that 60 cycle disturbances would correspond to 8.2 m.p.h. Noises arising from various other sources may have frequency correspondence up to the full 100 m.p.h indication of the instrument and cause *velocity errors of 100% or*

more. Yet, for a given tire inflation, a *speedometer* can be set and guaranteed to accuracy within 3% or better.

Who can know, except under controlled conditions for any given traffic situation, whether the speed indication was due solely to the returned signal from the target vehicle, or extraneous noises, or a combination of both? The factor of sensitivity to noise factors, particularly at higher velocity correspondence, makes it highly questionable whether *any* expert may properly testify in Court that, because his check of the instrument might have showed it to be reasonbaly accurate under certain test circumstances, it also accurately read the speed of the motorist at the time and circumstances in issue and NOT a velocity indication boosted by other causes.

Like the tuning fork, the simultaneous operation of the *police radio* during the speed check can cause an instrumental velocity indication without ever a car passing. Under cross-examination, radar patrol officers acknowledged this to be a fact. Independent tests established that this indication could be 45 m.p.h., or virtually any velocity, depending on the microphonic conditions of the radio.

In spite of this fact, standard operating procedure is for the operator of the radar car to transmit observed speed information *by radio* to another officer in an interceptor car up the street, who makes the arrest—and, note, not on what the arresting officer has himself observed, but on information radioed to him by the radar officer whose radio at the same moment of the transmission of such intelligence may have contributed to or caused the velocity indication of the "offending" target vehicle.

Besides the matter of instrumental error involved, this manner of operation not only again brings up the serious problem of hearsay, based on possible and probable misinterpretation of the true cause of velocity indication, but a *peak speed indication obtained in a fraction of a second, is not necessarily an indication of the sustained careless or willful speeding which the traffic ordinances contemplate.*

Even the shaking of a pocket ring of keys in relative proximate view of the instrument can cause recordings of, say 40 m.p.h, without ever the necessity of a reflected echo from a vehicle. The less the range from instrument to noise source, the less need be the power of the noise to over-ride or affect the very small signal echo from a vehicle, other conditions being equal. In this connection, let us bear in mind that the radar beam, shaped like a dew drop, is *not* confined within the specific area of a single target vehicle, but embraces an area extending from the instrument to sidewalks and other lanes of travel.

The police instrument is claimed to be effective within a cone of approximately 20° throughout a range of 175 feet. This range is based on the *expectancy* of an adequately strong reflected signal from the target vehicle's surfaces. But, *extraneous* noise sources —replete in city streets—may operate not only in the area of the

beam, but from greater distances where, with the greater power radiated by commercial stations or amateur transmitters (for example) they may be capable of actuating the radar instrument.

In none of the previous cases reported, nor in the case tried in Denver, was any testimony presented to prove that in selecting the speed-trap location, as part of a check-up of instrument accuracy, the police made any attempt to exclude such extraneous influences.

By way of illustration of the mechanism or error introduction, the instrument may be in the process of recording the velocity of a target vehicle at a distance of 150 feet, while *noise* emanating from a slow-speed jalopy within 10 feet of the radar car, or noise from microphonism in the radar car itself, or interference from a transmitter not far from the radar trap, may, in fact, be partially or wholly responsible for the maximum velocity recorded. Requiring the composite additional reflected energy from the vehicle to trigger the instrument above normal zero indication, the recorded graph could rise from zero with the approach of the vehicle and have all the attributes of a normal curve while, in fact, influenced by the extraneous noise source.

F.—*The Radar Equation Factors*

It should be observed at this point that for an expert to *properly evaluate* the police instrument and understand the radar principle involved he should know, not only the mathematics, but, also, the significance of *The Radar Equation.* Otherwise, like the radar police officer, it would be like qualifying the *nurse* that took the x-rays to testify thereon in place of the *doctor.*

The reflected radar energy is not determined merely by physical area of the target, but by the *effective* area and many other factors.[20] Like light waves, very short radar waves are not reflected evenly from curved and irregular surfaces. Most of the energy is reflected at glancing angles in hemispherical directions, with only small portions of energy reflected squarely back into the little box-like instrument from which they were transmitted. Even among the rays that are reflected in the right direction, interference takes place because of different distances traveled. Further complication takes place because of the fact that some rays travel directly to the target, in this case the automobile, while other rays follow reflected paths from the pavement.

Under these conditions of extremely weak and varying echo signal, seemingly insignificant objects may become major sources of instrument response. In much the same way that a metal rod constituting a car radio aerial is a better receptor than the whole surface of a car, so also a resonant rod only about 2½ inches long corresponds to a half-wave length at the transmitter frequency of 2455 Mc for this radar instrument. There are many possible vibrat-

[20] R.S.E., Pages 18-22.

ing accessories which could be resonant or inordinately responsive in their influence on the meter. Radio antennas and tire chains are examples.

The example of a car wheel, say a spoked wheel, will illustrate the complexity of the situation. It is a principle of mechanics that the top of a rolling wheel travels at twice the velocity as the axle which corresponds to the forward vehicular speed. The bottom of a wheel momentarily has zero velocity, but lies in an insensitive part of the beam. The succession of flashing spokes at the top region of the wheel, enhanced by being at the approximate height of beam center and passing through angles of perfect reflection as the car approaches the radar set, can become excellent radar signal reflectors. Now, remembering the radar instrument manual's statement that the instrument has *greater sensitivity to higher velocities,* we see that under certain conditions of reflection the higher speed of the upper wheel surfaces can produce a velocity indication in excess of the automobile's true forward speed. Indeed, since the top of the wheel does, *in fact,* travel at twice the linear velocity of the car itself, one might properly question the radar's accuracy if it *failed* to read the higher velocity.

The fact that an automobile has many flat surfaces, some of which might be *assumed* surely to be square with the radar antenna, does not necessarily decide the issue. This is affirmed by Reference 21 which states under the heading *Properties of Radar Targets:*

> Strong specular reflection will result whenever a flat surface happens to be oriented normal to the line of sight; yet the mere presence of flat surfaces is not enough to guarantee a strong reflection. If these surfaces were oriented in random directions, the probability of finding one at just the right orientation would be so low that the average signal from such a group of flat surfaces would be no stronger than the average signal from a collection of isotropic scatterers filling about the same volume.[21]

While no analyses of actual reflection conditions off the complex contours of an automobile are known to have been made, in the thorough manner in which aircraft have been studied, authorities have shown the extreme *variation* of reflected energy with change of aspect angle of airplane surfaces, not unlike those of an automobile. Reflected energy was found to vary as much as 3000 times in power as the aspect angle was changed, with changes of as much as 15 db (about 31 times) for changes as little as ⅛ degree in aspect angle.[22]

A car is an equally complex target, with wheels, fenders, curved and sharp surfaces, aerials, and other accessories; and the

[21] R.S.E., Chapter 3, Pages 100-101.
[22] *Id.*, Pages 21 and 75-81.

aspect angle relative to the police instrument is necessarily constantly *changing* because motorists pass to the side from front to back or vice versa, not precisely toward or away from the radar instrument.

Bearing in mind the words of the Denver trials' judge who stated that if just one person were convicted unjustly by the evidence of the police instrument, that would be one too many, the question any fair appraiser of the equipment should like to have answered is: How great must noise be to dominate the velocity reading, and how can one know when an accurate reading is rendered?

Our best hope of answer to this question would come from a highly involved computation using all the factors of The Radar Equation. Unfortunately, as applied to the *c-w type* of radar used in the police instrument, *the necessary information to fully determine this question is not completely known to science.*[23]

The difficult nature of the signal versus noise indication is authoritatively discussed in References 24 and 25, and the below-noted quotations should be read for an appreciation of this problem. The reader of these statements could scarcely give credence to any "expert" witness who glibly testifies that an equipment is "accurate" without benefit of scientific data.

Under the circumstances of authoritatively stated limitations of known knowledge of c-w radar signal-to-noise relationships, there is, indeed, much greater justification for challenging any claimed accuracy for the instrument, whatever the figure, than to place the burden of proof that the instrument is in error on the motorist.

G.—*Identification of Multiple Targets*

Let us now look at some further limitations of the police instrument, which cannot be disregarded in application. Possessing only a single beam-width antenna, there is nothing in the radar

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[23] R.S.E., Page 131.

[24] R.S.E., Page 35, under the heading The Statistical Problem: "Let us summarize what we *do* know, once we are provided with the overall noise figure, and band width of the receiver, the transmitted power, *and the geometrical factors in the radar equation which concern the antenna and the target.* We know the ratio of the amplified signal power to the average value of the amplified noise power. We are *not* yet able to say how large this ratio must be before the signal can be identified with reasonable certainty. The root of the difficulty is that we have to do with a statistical problem, *a game of chance.* The answers must be given as probabilities, and will depend upon many features of the system by which the signal is presented to the observer, as well as upon the precise description of the 'reasonable certainty' mentioned above." (Emphasis ours.)

[25] *Id.*, Page 37. "One can *never* be *absolutely* sure that any observed peak is not due to a chance noise fluctuation, and one cannot even say how *probable* it is that the peak is not due to noise, unless one knows how probable it is, *a priori*, that the peak is due to something else—namely, signal plus noise. Knowledge of *a priori* probability of the presence of signal is possible in controlled experiments such as those described in Volume 24, Chapter 8." (See also page 131, paragraph 3.)

principles of the police instrument to distinguish one traffic lane from another, and there is nothing in the graphical record of the instrument recorder to identify either traffic lanes or separate cars within lanes. Any such indication on the tape record presented in Court is only as ascribed by the radar *operator*. When multiple cars are in a common field of view, the instrument record is a *composite* curve affected to some degree by all the cars, and it is malevolent for an officer to ascribe a velocity peak on this composite indication to any *one* of the cars involved. An officer may think he is justified in doing this when he sees in the "steps" of the curve a semblance to the order of entry of cars into the beam, but the *velocity measurement* is *invalid* under this composite condition.

Moreover, in simple doppler radar of this type, no other identifying information of the target is revealed by the instrument than *radial* velocity and even this cannot be resolved for multiple target vehicles when there is no discriminating antenna or separate indicator response channels in the instrument.

The characteristic indistinguishability of radar target information, alike for both c-w and pulse radar, is authoritatively discussed in Reference 26, as quoted below. As noted, when (as in the police instrument) the radar beam is *not* considerably smaller in cross section than the individual objects viewed, there can be no identification or distinction of targets by shape or otherwise.

Keeping in mind the complicated nature of *reflection* we have discussed herein, it is presumptuous, indeed, for a radar patrol officer to interpret multiple inflections of radar graphs, and ascribe these inflections to particular cars, all in the 2 seconds of time that it takes cars to travel through the beam at 40 m.p.h., while at the same time he must identify the target vehicle and its license number—*and no instrument capability exists for resolving multiple targets.*

H.—*Operation of Police Radar Sets*

In operation, the police radar transmitter-receiver unit is set up near the edge of the street. The set is mounted either in the

[26] R.S.E., Page 126. "The reader may well ask whether a phenomenon has been overlooked which could be used to distinguish some targets from others. There appears to be no possibility for such a phenomenon in the elementary process of reflection of electromagnetic waves from inhomogeneities in the medium through which they travel. A returning wave is characterized by *frequency* (including *phase*), intensity, and polarization. If two targets within the radar beam—for example, a telephone pole and a stationary man—produce echoes similar in the respects listed, they are utterly indistinguishable, as much as we might prefer to label one clutter and the other the true target. Such echoes may very well be identical in the respects listed since no significant difference exists at these frequencies between the electromagnetic properties of a man and those of a piece of wood. To put it another way, the dimension of 'color' is not available because the radar cross section of most objects varies in no systematic way with frequency. Distinction by shape, on the other hand, is possible only when the radar beam is considerably smaller in cross section than the object viewed."

trunk of the police car or on the left rear fender, directly facing traffic approaching from the rear. A radio wave is sent out over an area of almost the width of the street and for a distance of about 175 feet. As a target vehicle passes through that operating zone, an indicated speed is read directly on the meter and graph. The operator of the radar car observes the license number and make of car and radios this information to a second car parked several blocks or more ahead. The second car, often referred to as the interceptor car, stops the motorist and issues a warning or ticket.

Since the radar officer sits in his car with his back to oncoming traffic, he must perform the multiple function of operating and watching both the graph and meter in front of him on the dash board of his car and simultaneously observe oncoming cars *through the rear-view mirror.* The license numbers of over 50 feet are extremely difficult to read, and, moreover, *appear backwards from right to left in the mirror.* By actual test, it takes more than five seconds to read numbers in motion, for the ordinary individual not trained to read backwards; whereas, the approaching vehicle is typically in the beam only 2 seconds.

It is only *after* the motorist comes up from the rear into view ahead of the radar car, *after the instrument record has been made,* that the officer reverses his field of vision from mirror to direct view of the *now* rear end of the passing car, that the license numbers appear in true sequence—if time and traffic even then permits reading. If a second observer is used, sitting on the other side of the car, he has an even more restricted view of traffic.

To comprehend the difficulty of this observation, one may well test himself with reading from street side the license numbers of any 40 m.p.h. or faster car passing from the rear, or from the front for that matter, without having anything else to note than the license numbers.

Actually, doppler radar theory (the police instrument kind of radar) does not sanction such use of simple continuous wave doppler radar where multiple moving targets are involved.

> *The doppler system can handle only one target at a time, or roughly one target per beam-width for a scanning system. By contrast, a high-resolution pulse system has something like 1,000 separate range elements, and hence can handle many targets per beam-width.*[27] (Emphasis ours)

That is, the police instrument is not the right kind of radar to deal with conditions of multiple targets, such attributes belonging to high-resolution *pulse* systems. Further, in the simple doppler system, approaching and receding targets are indistinguishable, insofar as both produce the same doppler frequency.[27]

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[27] *Doppler Radar*, Proceedings, Institute of Radio Engineer (1949), Page 345, by Edward J. Barlow.

The police instrument is not a scanning system, and the antenna has only one relatively broad beam-width, about 20° wide, utterly unable to discriminate between targets in an area out to the instrument range of 175 feet. All reflected radar energy from the entire conical area of this beam joins energy from noise and vibration sources, including that conveyed through microphonism in directions outside the beam, and enters the instrument in unresolved catch-all packs of energy. Since the instrument must remain responsive to all doppler frequencies corresponding to velocities from 0 to 100 m.p.h., in accordance with its stated capabilities, it cannot select with positive discrimination any separate velocities corresponding to different targets without having separate channels of registration.[28] Merely providing for different *sensitivity* of response amid all the other conflicting factors affecting the radar transmission is not enough.

Considering this lack of discrimination of targets in a view 20° wide and 175 feet long, let us ask what would be the reaction of the public to use of such an instrument to single out the winner of a horse race, for example, where comparable speeds are involved, and where a *light* beam of shorter wave length than *radar* waves, impinging on a photoelectric cell, has been found deficient to the extent that a photograph must be taken besides?

The police instrument is able to resolve no such identification or target distinction in the whole field of view, and this is not the type of radar which can separate targets by discrete measured differences in range and direction... Such properties of *resolution* do belong to some of the great military and airport systems we read about; but, remember, the police instrument is *not that kind of radar.*

I.—*Accuracy of Calibration*

There is another area in which direct testimony of police radar patrol officers reveals use of their instrument beyond the limits for which doppler radar laws give sanction. Officers testify in Court that the instrument indication is checked by having another patrol car drive by the radar car, and having the driver call out the miles-per-hour reading of his *speedometer* as he passes by. It is then asserted that if the radar reading checked the speedometer exactly, the radar instrument calibration is accepted as accurate and placed in use to check other cars.

In addition to the serious departure of this method of calibration from radar laws, a serious problem of hearsay is apparent. One Court held such testimony to be inadmissible hearsay, for each officer had no first-hand knowledge of what the other officer told him. The radar officer knew only what he had heard. Since, if radar evidence is to be admissible, the testimony of officers is re-

[28] R.S.E., Page 159.

quired as to the accuracy of the radar speed meter as part of the city's case, a grave problem of proof is raised.[29]

Unfortunately for the motorist, when the instrument calibration is established in the above-described manner, the instrument will read excessively high when applied, not to a car passing almost abreast of the instrument, like the police car, but to approaching cars at distances of 125-175 feet down the street—which is the range recommended by the instrument book as the nominal range at which more typical instrument triggering of oncoming traffic record occurs.

This disparity of calibration comes about through another compromise in the police instrument; this time not a point in design, but in the theory of operation itself. Doppler radar, unlike the mapping type radars which show relationships between many points at once, as derived from different indicated *ranges* and *directions,* is only able to show velocity of a target *along a line toward itself.* Since the car passes not directly toward but at an angle to the instrument, *the measured and true velocity only become one and the same when the instrument lies in the path of the moving vehicle, which, on straight streets, would be the direction of a head-on crash, and, therefore, not realizable.*

The police instrument *Operating and Maintenance Manual* recognizes this point, but deprecates its significance somewhat arbitrarily, justifiable only under restricted circumstances of use. Having cited the doppler frequency formula, the Manual, under the heading, *Theory of Operation,* states:

> The above formula is specifically true only when the direction of movement of the target is in the same direction as the shortest distance between the Transmitter-Receiver and target. An angle between the two directions requires a cosine factor for the more general solution. The cosine of the angle, less than 10 degrees, however, yields an accuracy within 2%; this factor can, therefore, be dropped.

The arbitrary selection of a figure of 10 degrees here presumes use of the instrument at a minimum distance of approximately *57 feet,* when the instrument is placed at the 10 feet distance from the edge of the road allowed by the Operating and Maintenance Manual (i.e., tangent of $10/57 = 10°$).

Yet, under *Operational and Electrical Characteristics,* the manual clearly states: "Operating Zone: Vehicle detection is effective within a cone of approximately 20° *throughout a range of 175 feet.*" (Emphasis ours).

Both direct and cross-examination testimony of the police radar patrol officers substantiated the fact that the instrument is activated at ranges of 25 to 175 feet. Use down to at least 25

[29] People v. Offerman, 204 Misc. 769, 125 N.Y.S. 2d 179.

feet was also observed by an engineer witness, and testimony has already been cited wherein radar patrol officers stated they checked speedometer indications against the instrument as another police car *passed by.*

At such lesser distance of 25 feet down the street, the disparity in angle when the instrument is placed 10 feet off the traffic lane is *not* 10°, corresponding to a 2% error, but is the tangent of 10/25, or approximately 22°, *the cosine error of which is 7.3%.*

Actually, the degree of error is greater than that computed because, as the Instruction Manual notes, the instrument is required to be set up no more than 10 feet "from the edge of the road." It is well known that speeding vehicles, particularly in multi-lane traffic, do not travel at the very *edge* of the road. The difference angle and consequent velocity error could, therefore, be very much greater than that computed from an assumption of only 10 feet to the vehicular line of travel. *For a line-of-traffic separation distance equal to down-the-street vehicular distance, the indicated radial velocity of the instrument would differ from the true velocity of the vehicle by the cosine of 45°, or an error correspondence of 29.3%.* This, along with all the many other separate error sources cited, confutes the "popularly" held notion, as expressed by a Justice of the Peace, sitting in the trial of an offending motorist, that the instrument is *only* 2 miles per hour "off".

In another phase of testimony, in the Denver trials, a police radar patrol officer testified that he "proved" the instrument's ability to distinguish multiple targets by parking his radar car along Santa Fe Road, about 50 feet from the railroad tracks, and checked the speed of both a police car and the train, as viewed simultaneously through vehicular traffic on the road. This officer claimed exact correspondence between instrument reading and the speed held by the engineer of the train.

Under this condition of 50 feet separation from the railroad (which, incidentally, violates the Instruction Manual's admonishment under Section II that "The Transmitter-Receiver should be located as close to the moving traffic as safety and convenience will allow, in no case more than 10 feet from the edge of the road".), a 10-degree difference angle to hold to 2% error would require that the train be observed at a parallel road distance of 274 feet (i.e., tangent 50/274 = 10°), or, an actual diagonal distance of 288 feet to the train (i.e. sine 50/288 = 10°).

Since the *Operating and Maintenance Manual* recommends adjustment of the instrument to intercept traffic at a nominal maximum distance of 175 feet, the officer's "proof" by identical velocity indications can mean only two things: (1) *The calibration of the radar instrument would have to be excessively high in order that the cosine velocity component alone (to which the instrument responds) would equal the true velocity of the train, (at an angle greater than the 10° limit ascribed by the Instrument Manual for*

2% error), and/or (2) *The instrument must be sensitive to relative effective area of the target to a degree which, in typical traffic, could cause varying velocity response of the instrument according to the different angular distances at which different size vehicles would actuate the instrument.*

Agreement of speed readings when the instrument was so much as 50 feet abreast from the train was therefore in reality a confirmation of error in the instrument calibration, instead of the "proof" of accuracy represented to the Court. For, the velocity calibration would have to be *more than 100% of true* if the instrument's sensitivity to only the *cosine component* (which must always be a fraction smaller than 1 at an angular displacement) was itself equal to 100% of the train's reported true velocity.

This, in fact, complete reversal of the alleged "proof" points out nakedly how utterly incompetent such testimony as the above is, and the abuse of the rules of evidence when operations officers are allowed to testify on technical matters.

Whether the disparity between the radar instrument's reading of *radial* velocity as compared with *true* velocity will under other circumstances favor or weigh against the motorist, will depend entirely on the police calibration procedure. While nominally the radial velocity must be less than the true velocity, arbitrary procedure of establishing instrument calibration in a short distance or wide angle test, and then using this reading to check motorists at the lesser angle of maximum approach distance will assuredly result in an increase *over* 100% of true velocity being ascribed to the motorist, by an amount proportional to the difference in cosines of the two different angles of *test* and *application.*

For the same reason, a very large bus or van, to which the instrument is sensitive at greater distances, will be "seen" at greater distances (corresponding to more nearly parallel angles) and will tend to show *higher* velocities than police vehicles checked at closer range; whereas, smaller sport cars (perhaps most likely to be speeding), presenting lesser reflective surfaces, will tend not to "trigger" the instrument until shorter distances are reached where the sharper angles to the side result in a lower cosine component of velocity being indicated by the instrument.

We see, therefore, that the instrument readings are subject to still further sources of error by reason of arbitrary calibration procedure.

J.—*Reliability of the Claim by Radar Car Officers that they can Correlate Visual Observations to Complex Instrument Records.*

We have already cited authoritative theory explaining why the police type instrument is not capable of separating multi-car signal information, having as it does only a single fixed radar beam and a single indicator channel. Likewise, claims of separation by reason of varying sensitivity are not valid in an instrument which must *remain sensitive* over a 0 to 100 m.p.h. range, and affected by multitudinous other sensitivity factors such as

nearness, effective area, zone of operation, and wave cancellation by reflections and interference.

So, *also invalid* is the claim by the operating officers that they may directly correlate their visual observations with the instrument record, to establish further interpretation of instrument record than that contemplated in instrument theory and design. The fallacy of this notion is supported by the *Operating and Maintenance Manual* itself. Under the heading *Theory of Operation,* it is explained that the meter actuating circuit depends on a tube which is *prevented from operating* until a "reasonable" signal reaches its grid. Then, *as the signal increases* in magnitude the preceding stages operate as *limiters.* It is further stated that in order to *suppress* some signals and to take care of *decreases* in signal amplitude which might cause the meter to *lose its reading* for an instant, an automatic *expander* is incorporated in the circuit. *Clamping* action is also involved, working off the output tube.

Such design was obviously intended to produce clean, readable graphs, instead of showing all the effects of signal variation. But, can even a layman read through the cited use of *signal prevention* circuits, *limiters, suppressed* signals, *expander* action, and *clamping* action without failing to appreciate that the *output* signal to the meter is *not linear* with the *input* signal to which the instrument responds? Without a direct or one-to-one correspondence between input and output, it is impossible to correlate the external physical occurrence with the instrument output record except as an intricate scientific problem in which one would be required to know, among other things, the precise signal levels at which all the various clamping, limiter, and expander circuits were designed to "trigger" and operate.

As a point of fact, the arbitrary use of limiters and volume expander, to *over-ride* the true doppler signal tendency of the velocity meter to follow a cosine-law of response as the radial component of velocity changes, creates a *delusion* in the operator of thinking he is seeing a *true* velocity record instead of the *radial* velocity to which doppler radar really responds. The testimony of officers in the Denver trials showed they were so deluded. If the instrument output truly corresponded to the input signal obtained from a vehicle traveling at constant speed in a straight-line course past the instrument, the recorded velocity should *not* be similarly constant because the *actuating velocity* is only the cosine component of the true velocity; this component velocity decreases as the angle to the vehicle becomes greater until, when the car passes at right angles or 90°, the actuating velocity is, in fact, *zero.* Hence, the delusion when circuitry is devised to *artificially* sustain and *record* a velocity indication at a level not corresponding to the velocity being derived by the radar beam at that time.

Even a skilled radar engineer could not fully interpret the graphical record to correlate all possible traffic movements from

one moment to the next, beyond the limits (1) cited in doppler radar theory, and (2) as established by intricate laboratory controlled tests of the precise signal levels at which the suppression, expansion, clamp, and other circuits are triggered or activated in an instrument of particular design.

When a Court expert witness sought, by direct request to the instrument manufacturer, radar test data of a type which would permit instrument evaluation, including the various circuit signal thresholds and the basis used for establishing the instruction book stated accuracy figure of plus or minus 2 m.p.h., his request was denied. How, then, can the presumptuous interpretations of a radar car *officer,* interpreting the manifold graph inflections of multiple-car situations "seen" by a single catch-all radar beam, possibly be regarded as admissible evidence in Court?

We conclude this part of this presentation by asking these fundamental questions: Who *does* affirm that any and all of the multifarious factors capable of influencing radar accuracy to indeterminate degrees may be *arbitrarily neglected* in establishing the plus or minus 2 m.p.h. accuracy claimed for the police instrument?

Who affirms what the characteristic response of the instrument will be under the different conditions of sensitivity and expander circuit adjustments made *accessible* to non-scientific personnel in the instrument?

Who ventures to affix even the *probability* of receiving signal unaffected by noise under *all* the conditions of traffic use and uncontrollable surroundings, in the face of all the cited authority that says this is not possible except in fully controlled circumstances of laboratory test?

By letters under dates of January 6, 1955, and June 7, 1955, respectively, both the *United States Bureau of Standards* and the *Federal Communications Commission,* state that neither agency has been requested to conduct detailed study of the so-called "radar" speed meters. Thus, as of this writing, there seems to be no government agency or recognized technological institution that has determined the *standards of performance and operation* that shall be observed in such instruments. It goes without saying that in the absence thereof, legislative sanction for checks on speed by use of "radar" devices, and making such checks prima facie evidence of speed, is not only improper but certainly subversive of established and long-tested rules of evidence.

II.—ADMISSIBILITY OF RADAR SPEED CHECKS

It will be recalled that Jones was convicted of speeding on the *sole evidence* as shown by the indicator graph. It was objected to on the ground that no trustworthy scientific basis had been established for the particular speed check made under the unique and uncontrolled conditions existing at the time to justify the admission of such check as substantive evidence of anything. This was overruled.

In *State v. Moffitt*,[30] over a similar objection, the Court allowed the question to go to the jury with this instruction:

> In the present case, however, before you can return a verdict of guilty under this contention—that is, a finding by reason only of the speed meter—you must be satisfied beyond a reasonable doubt that the speed meter used in the present case was functioning properly, was properly operated at the time, and was in fact, an accurate recorder of speed; further, that its accuracy had been properly tested within a reasonable time from the date of its use, January 6, 1953.
>
> If these essentials are found by you to exist, you may determine that the Speed Meter recorded the accurate speed of the defendant's vehicle at the time of the test on January 6, 1953, and such finding standing alone, if made by you, would furnish sufficient evidence for the conviction of the defendant in the present case.

While we do not disagree with the instruction, we challenge the sufficiency of the radar facts presented in this case in view of what we outlined above respecting the variables, imponderables, uncertainties, and questionable design of the radar instrument. Without those facts, how can a jury of laymen possibly arrive at a fair verdict?

This problem of sufficiency, related to admissibility, was, however, recognized in *People v. Offerman*,[31] wherein the defendant had been convicted in the City Court of speeding, based on evidence shown only by the radar speed meter. The judgment of conviction was reversed upon appeal on the ground that the *accuracy* and *reliability* of the device had not been shown by *proper* and *competent* evidence. In remanding the case for re-trial, the Appellate Court said:

> Law enforcement should keep in stride with the advances of science, and Courts should receive scientific proof when presented in accordance with the established rules of evidence. These rules have safeguarded our lives, our freedoms, and our property since the establishment of the common law, and should not be lightly set aside in the name of convenience. It may be that these electronic devices will become a great and much-needed weapon in the armory of law enforcement . . . In the not too distant future this science may bring civilization the horrors of a push-button war, but it must not bring push-button justice unless and except such justice is surrounded by the long-established rule of evidence.

[30] 100 A. 2d 778 (1953).
[31] 125 N.Y.S. 2d 179.

This latter decision recognizes also the problem of scientific dependability, which we have outlined above, about radar speed meters. The fact that the defendant in the *Offerman* case, upon retrial, was again convicted, and that the same result was obtained in *People v. Torpey*,[32] follow from the practically total lack of evidence on the limitations of radar, as prevailed in the *Moffitt* case, supra, allowing the prosecution in all three cases a field day.

In all three of the aforementioned cases, the city relied on an expert's opinion. In none of these cases did the defense have experts evaluate not *only* the manufacturer's claims for radar speed meters, but a scientific analyses of the whole situation. It is obvious that where only the "bright" side of the picture is presented and the "dark" side is not presented, considering the complexity of radar principles and application, ordinary jurymen are bound to be persuaded by the still-existing mystery surrounding the name "radar". It should be clear, too, that an expert's opinion on what actually occurs at the time the speed checks are made must be based necessarily on the assumption that *all* variables and idiosyncracies of radar were under control at the time and place of the speed check, and the instrument was influenced *only* by the return echo from the target vehicle. Indeed, such assumption and such speed check, as we pointed out above, should have no efficacy whatever unless the factors of radar limitations are properly explained for each and every traffic violation tried on the basis of *only radar* evidence.

On this point of admissibility, the few representative cases cited herein, seem to stand for the proposition that the results of radar speed tests are admissible if the proper foundational requirements are met, and these seem to be limited to a radar expert's opinion; and this, without any showing of compliance with competently pre-determined standards of performance and operation that shall be observed in the design and operation of radar speed meters at the *time* of the alleged violation.

III.—THE PROBLEM OF ENTRAPMENT

Most popular references, mainly newspapers, refer to the radar speed check as "Radar Trap." No human likes to be trapped, however laudable the purpose. Entrapment under special circumstances may be a defense to criminal prosecution. With such an attitude by the public against speed traps, a serious problem of "relations" between the police and public is raised. If the police are to be regarded as the true guardians of the law and the servants of the people whom they shall protect, this problem of entrapment should receive serious attention. To assert "that radar traps are aids to law enforcement and assist in curbing senseless slaughter of human beings on our highways and streets," as justification for the *means* employed, is to misapprehend the damage those means can do. Who can doubt the wisdom that actively patrolling the

[32] 128 N.Y.S. 2d 564.

streets is the tested and best way of *preventing* unlawful speeding, and that *prevention of crime* is far better than apprehension after the *preventable* crime has taken place![33]

California, Oregon, and Washington have adopted statutes prohibiting the use of speed traps, in response to public demand.[34] On the other hand, the states of Virginia and Maryland have adopted statutes governing the use of radar for traffic control.[35]

If radar speed traps must be used, to prevent the development of bitterness and anti-social feelings, legislative sanction first should be obtained and such legislation should lay down the *standards of performance and operation* for radar speed checks. Moreover, the fact that the police in the exercise of discretion will not arrest speedsters whose radar indications do not exceed the speed limitations by 7 to 12 miles, to allow for error, is, in fact, a specie of "Discriminatory Legislation" giving rise to the question of *who* in our coordinate branches of government, should decide that a 30 m.p.h. speed ordinance really means 37 m.p.h.? This raises the serious question of *due process of law* under which an ordinance must be sufficiently explicit in its description of the offending acts and related to an *ascertainable standard of guilt.*

Such legislation, suggested to overcome these criticisms, presumes the will of the people reflects itself therein, and, when enacted, it is the people themselves who sanction the use of speed traps and hence, because such legislation may be repealed, should not be heard to complain. Surely this is the better policy under our system of government, than for an executive agency, like the Police Department, exercising authority under the police power, to usurp legislative authority and even invade the province of the Courts, no matter how well intentioned, by the arbitrary adoption of said radar instrument in the absence of definite legislatively sanctioned standards of design and operation, including a statute making proof of certain facts prima facie evidence without affecting the ultimate burden of proof.

IV.—THE PROBLEM OF JUDICIAL NOTICE

Obviously in the present state of radar speed devices judicial

[33] Fleming v. Superior Court, 196 Cal. 344, 238 Pac. 88.

[34] Cal. Vehicle Code, Sec. 751 (1948); Cal. Vehicle Code, Sec. 752 (Supp. 1953); Ore. Rev. Stat., Sec. 483.112 (1953); Wash. Traffic Code, R.C.W. 46.48.120 (1937). In respect to the Wash. Statute, the Attorney General of that state is of the opinion that the statute is designed to apply to a situation where there is a measured course, a lapsed time clocked by an officer, and a computation of speed. The Attorney General felt that the Legislature had *considered* the elimination of human error in such situations by taking notice of the fact for example, that a car traveling at 50 m.p.h., over a course 600 feet in length will cover that distance in 8 seconds; and that a lag of 1 second in human perception will result in an error of 6 m.p.h., therefore the wording of the statute does not prohibit the use of radar traps because with a "radar" device there is *no possibility* of human error, and consequently radar evidence is admissible.

[35] Md. Ann. Code, Gen. Laws, Art. 35, Sec. 99 (Supp. 1954); Va. Code, Sec. 46-215.2 (Supp. 1954).

notice of their accuracy cannot be expected. Proper foundational requirements must be met first as a condition precedent to the admission of such evidence. Moreover, if admissible at all, the weight of such proof is a question for the jury to determine, the same as any other evidence. All of the reported cases seem to hold this view.

In the case of *People v. Torpey*[36] the Court stated:

> No expert testimony was offered on the part of the people to establish the fact that the so-called radar equipment is a mechanism that correctly and accurately records the speed of passing automobiles. The use of radar is comparatively new as a means of bringing about the arrest of violators of ordinances pertaining to the speed of automobiles, and until such time as the Courts recognize radar equipment as a method of accurately measuring the speed of automobiles, in those cases in which the people rely solely upon the speed indicator and the radar equipment, it will be necessary to establish, by expert testimony, the accuracy of radar for the purpose of measuring speed.[37]

In another case, *People v. Beck*,[38] the Court refused to admit that the accuracy of radar was so generally known that a court of justice should take judicial notice thereof and reversed the conviction of the defendant against whom the evidence consisted partly of a radar speed meter results and partly of eye-witness testimony as to speed. The Court held that the eye-witness testimony was admissible, but that the radar testimony was not admissible unless supported by expert testimony. And because it did not appear from the record that the defendant was convicted solely on the basis of admissible evidence, the case was reversed and remanded.

In the only other case, aside from the Denver trials, wherein the defendant attempted to prove the inaccuracy of the radar speed meter, *State v. Dantonio*,[39] the New Jersey Court heard the testimony of both radar and tachograph experts. The radar expert testified that *all* defects in the radar equipment resolve in favor of the motorist! This was unchallenged. The radar officers testified they operated as a team of two—one in the radar car, and the other in the interceptor car. The manner of testing and setting up the equipment was the same as outlined previously in this article and the instrument was the same. But unlike *State v. Moffitt*,

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[36] 128 N.Y.S. 2d 864 (1953).

[37] 5 MERCER L. REV. 322 (1954); wherein this view receives unqualified support by the observation "the modern mind has a tendency to pay homage to the advancements of science by accepting, without question, hypothesis (sic) coming even from the very frontier of research."

[38] 130 N.Y.S. 2d 354 (1954).

[39] 105 A. 2d 918 (1954).

supra, and *People v. Offerman,* supra, the police, in this case, produced and introduced in evidence, *as part of* the speeding proof, *the written record of the speed of the bus as made at the time of the violation over a distance of 46¼ miles.* The defense countered by introducing expert evidence on the accuracy of the tachograph with which the bus was equipped. The evidence of this instrument showed that the bus slightly exceeded the speed limit of 60 m.p.h. But, in no part of the evidence in this case, and for that matter, we repeat, in no other case reported, was the radar instrument and the manner of its operation properly evaluated to disclose its limitations in practical application.

So, in this battle of *Radar v. Tachograph* the issue was decided upon *rebuttal* testimony produced by the state. And this is significant. The rebuttal evidence was given by a traffic engineer, who testified "that the mileage from the toll booth at interchange No. 4 to mile post 80½, the point where the radar equipment was set, is 46¼ miles." He proved mathematically that for the bus to have travelled 46¼ miles—the bus must have been clocked and its time checked both at the toll booth and when it passed the radar instrument—in approximately 40 minutes, it must have travelled at an average speed of 66 m.p.h. Two facts should be noted here, (1) it was the distance and time factors between the toll booth and radar instrument, and (2) the indisputable mathematical computation which *decided the issue*—not either of the said instruments.

We observe that no judicial notice was taken of the accuracy of either instrument. Also, this case stands for the proposition that there is no adequate substitute, notwithstanding the miraculous claims made for radar and its *short-circuiting affects* in Court, for the long-established practice of producing *independent corroborative testimony.* Since we have shown that the radar speed instruments possess frailities not unlike in variety to those possessed by human witnesses, *why should Courts and juries accord its results unquestioned credibility,* not accorded to uncorroborated human witnesses?

We conclude this discussion on Judicial Notice with the pertinent observation and approval made by the New Jersey Court of the Court's statement in *People v. Offerman:*[40]

> The legislature in its wisdom might see fit to declare that the reading of an electrical timing device similar to the one here may be admitted in evidence as prima facie evidence of the speed of the automobile of an accused, after such device has been certified as accurate by the authority designated by the legislature. By such legislation, the People will be relieved of the burden of proving the accuracy of the electrical timing device upon each trial and by expert testimony. The traveling public will be protected against convictions based upon the reading

[40] 125 N.Y.S. 2d 179; 204 Misc. 769.

of an unproven and possibly inaccurate device, and of equal importance, the rules of evidence will not be violated.

Since, therefore, judicial notice of the accuracy of radar speed meters, if taken, would be cognizant of a fact deemed to be measured by general knowledge of the same fact,[41] it would pervert the truth, because such fact is not accepted without qualification or contention.

V.—THE HEARSAY PROBLEM

Keeping in mind how the radar instruments are tested before use, and the gap between the time and place of the radar check and the "information" given to the radar expert (whose tests of the instrument do not prove the conditions of the instrument), likewise, the *actual* manner of operation at the time, nor less definitely, the extraneous conditions prevailing at the time and place of the radar check, we are confronted with a serious problem of hearsay. In the case of *People v. Offerman,* supra, the only Court to discuss part of this problem, the Court held that the testimony of the radar police officers regarding their so-called checks for accuracy of the instrument was inadmissible hearsay. The radar officer, even if the radar principles involved were not a serious factor, had no precipient knowledge of what the other officer told him. He knew actually only what one had heard.

The position of the expert is even more delicate. He has to assume that the conditions prevailing when he tests the instrument were the identical conditions, *as told to him,* that prevailed at the time and place of the actual radar speed check. He must necessarily be confined to the evidence of facts in the case. And remember those facts are testified to by precipient witnesses, radar officers, who are not competent to accurately report the *radar factors* that actually prevailed at the time and place of the speed check. The expert's opinion based on such a foundation has no better status. If the expert bases his opinion upon his personal knowledge he must give the *facts* upon which it is based before stating it.[42] Since he is never on the spot at the time, this would be impossible unless the hearsay rule is violated.

VI.— PROBLEM OF THE PRIMA FACIE CASE

In the states of Maryland and Virginia where they have statutes [43] under which to make out a prima facie case, the prosecution has a relatively simpler problem. Since such statutes as, for example, the Virginia Code, provide that "The results of such checks shall be accepted as prima facie evidence of the speed of such motor vehicle in any court or legal proceedings where the

[41] 20 Am. Jur., Evidence, Sections 17-18.
[42] 20 Am. Jur., Evidence, Sec. 794.
[43] MD. ANN. CODE, Gen. Laws, Art. 35, Sec. 99 (Supp. 1954); VA. CODE, Sec. 46-215.2 (Supp. 1954).

speed of the motor vehicle is at issue," all that need be proven thereunder is that the arresting officer was in uniform at the time; that speed signs were properly posted; that the radar mechanism was properly functioning; that the defendant was the driver of the car which was shown by the radar speed meter to have exceeded the speed limits; that the information regarding the offending car was immediately radioed to the interceptor officer who made the arrest. While the ultimate burden of proof is not affected by such statutes, they, nevertheless, make prima facie evidence of speed the *results* of a mechanism which we have pointed out is extremely vulnerable to many factors. The principal weakness here is that no *standards of design and operation* are laid down by the legislature. This opens up a whole field of dispute. May the legislature enact a law affecting the rights of citizens in Court, which law embraces intricate and complex scientific mechanisms, without specifying minimum essentials of compliance of said instrument to scientifically determined safeguards? Apparently it can, but is it right?

It seems to us that such statutes as mentioned take the place of judicial notice of the accuracy and reliability of such instrument. And we have seen that no appellate court has given such judicial notice because the accuracy and reliability of such instrument must be proven like any other evidence sought to be introduced. Until such standards of design and operation are specifically embodied in the law, we believe the Courts are right in refusing to admit such evidence until the *proper foundation* has been laid in each case. It is plainly obvious that radar facts and principles are *not* of such generalized knowledge and so universally known that they cannot reasonably be the subject of dispute. That being so not only is such *legislative notice,* as referred to, improper, but also otherwise a prima facie case is difficult to make, if not impossible, in view of the present status of radar speed meters.

When the *fact* of radar speed check accuracy is explained and contradicted, the foundations for a prima facie case in behalf of the proponent of that fact are destroyed, and, if not, the issue thus made must go to the jury for determination. Whether, therefore, the proponent of unquestioned accuracy of such instruments produces prima facie evidence showing the existence of the fact of accuracy and reliability as against the opposition's contradiction thereof, and thereby makes out (notwithstanding the contradictory facts) a prima facie case, depends on understanding of the scientific *facts* involved herein. And because a prima facie case is made out only by proper and sufficient testimony [11] in view of the scientific explanation herein given, we find that "radar" evidence alone, without supporting admissible corroborative testimony, is insufficient to establish a prima facie case.

[11] 32 C.J.S., Evidence, Sec. 1016.

VII.—CONCLUSION

When we stop to consider (1) that "radar" has to do with energy which travels at the speed of light, or *186,000 miles per second,* (2) that the activation of the instrument is in terms of *fractions* of seconds, and (3) that *human* operators possess limitations in the speed with which they may accurately respond, giving rise to all of the aforementioned imponderables, we cannot escape from the thought of whether or not Police Departments and Justices of the Peace have grasped at this speed device, not so much for laudable purposes, but for the more certain and greater number of "apprehensions" as a revenue measure!

This question cannot escape the thoughtful citizen when in the course of 3 months' use in Denver 1,600 motorists were nipped $20.00 each, or about $32,000.00! If, therefore, such devices are used in all the arterial highways of a city, and if the speed ordinances must be interpreted to mean that a violation for only a fraction of a second is sufficient for conviction, have we not through a "scientific gadget" found a way to "tax" our citizens without proper "representation" and, much worse, subvert the *true* purposes of our Courts?

It may very well be that the "experimenters" in the frontiers of research will eventually produce a radar speed device that cannot be questioned, and no suggestion is herein made that the law should drag behind the progress of science; but since the rights of citizens are involved, the better policy to pursue is for the Courts to resist the peddlers of electronics miracles and not allow "it [the science of electronics] to bring push-button justice unless and except such justice is surrounded by the long-established rules of evidence . . ." and, even then, not until "after such device has been *certified as accurate by authority designated by the legislature.*"[45] (Emphasis ours)

[45] People v. Offerman, 204 Misc. 769, 125 N.Y.S. 2d 179.

RECENT OPINIONS OF THE ATTORNEY GENERAL OF COLORADO

CITIES AND TOWNS

55-2777—February 7, 1955

REQUESTED BY: William Atha Mason, Attorney at Law Rifle, Colorado

FACTS: Members of the board of trustees or city council frequently sell supplies to or perform labor or services for the town while on the city council and charge the city for the same.

QUESTION: Is it permissible for a member of the board of trustees or city council to sell supplies to or to perform labor or

services for the city and charge the municipality for the same?
CONCLUSION: It is not permissible.

COLO. A & M COLLEGE—CITIES AND TOWNS—TAXATION
55-2767—January 6, 1955

REQUESTED BY: W. E. Morgan, President Colorado Agricultural and Mechanical College
FACTS: The City of Fort Collins desires to annex property owned by the State of Colorado and used as the Colorado Agricultural and Mechanical College. The state-owned property is contiguous to the Municipality.
QUESTIONS: 1. May the city annex state-owned land occupied by a state institution?
2. If this property is annexed, would the state lose its sovereign rights and power or subject the college to municipal taxation?
3. Does the State Board of Agriculture have the power to consent to the annexation, or will special legislation be required authorizing the board to consent to the annexation?
4. After annexation, would the college be subject to municipality building codes and zoning regulations?
5. Does the State Board of Agriculture possess the power to contract with the City for special rates on public utilities?
CONCLUSIONS: 1. A municipality may annex state-owned land used for purposes of a state institution.
2. After annexation, the City could not encroach upon the sovereign rights or powers of the state, and the college property would be free from taxation.
3. The State Board of Agriculture has the authority to consent to the annexation, providing the fee simple title to the state property is held by the Board. However, if the title is in the name of the State, then only the State, by special legislation, may consent to the annexation.
4. The City may not impose building and zoning regulations on the college property. The State has vested the power and duty to construct buildings and their type in the Board. However, should the college propose building in a zoned area, the city zoning laws would control.
5. The State Board of Agriculture may contract with the City for special rates on public utilities.

LEGISLATURE—CITIES AND TOWNS
55-2785—March 1, 1955

REQUESTED BY: William Bodan, Jr., City Attorney, Englewood, Colorado
QUESTION: Can a city councilman also hold office as a state representative?
CONCLUSION: There is no prohibition against a state representative holding office as city councilman inasmuch as he was elected to the latter office. See *Carpenter v. People*, 8 Colo. 116, 5 Pac. 828.

THE SECURITIES ACT OF 1933: "PRIVATE" OR "PUBLIC" OFFERING

By IRVING M. MEHLER *of the Colorado and New York Bars*

The question relating to the sale of securities to a given number of persons in interstate commerce by the incipient corporation as well as by the corporation of repute and long standing has in a great many instances placed the attorney and the client on the horns of a dilemma. On the one hand we find the corporation in dire need of immediate capital, and on the other hand we find the attorney unable to state precisely the number of persons who may be approached to purchase stock in the corporation without violating the provisions of the Securities Act of 1933 [1] pertaining to the registration of securities.

It is basic that a corporation seeking to raise a sum in excess of $300,000.00 through a public offering of securities in interstate commerce must file a registration statement with the Securities and Exchange Commission. Should the corporation find that its financial straits could be alleviated with an amount less than $300,000.00, it could seek an exemption from registration under the Revised Regulation A [2] upon compliance with the provisions of that regulation. In any event, whether the corporation is seeking a sum in excess of $300,000.00 from the public or whether it is seeking an amount under $300,000.00, compliance with the Act or the regulation, as the case may be, becomes mandatory.

In view of the fact that in the particular instance under discussion the financial needs of the corporation are pressing and a "public offering" under both the Act and the regulation is time consuming, it is the aim of this paper to explore the question of how many persons may be approached to buy stock in a corporation without the transaction being considered a "public offering" and therefore exempt from registration. Or to put the question in another way: When is a sale of the securities of a corporation in interstate commerce to a given number of persons considered a "private offering" and therefore exempt from registration?

I. DEFINITIONS

Before attempting to solve the ultimate problem, it may aid considerably to note how all-embracing some of the following basic working terms are under the Securities Act of 1933:

> (1) The term "security" means any note stock, treasury stock, bond, debenture, evidence of indebtedness, certificate of interest or participation in any profit-sharing agreement, collateral-trust certificate, preorganization certificate or subscription, transferable share, investment contract, voting-trust certificate, certificate of deposit for

[1] 48 Stat. 74 (1933), 15 U.S.C. Sec. 77c.
[2] 15 U.S.C. Sec. 77c(b) (1953).

a security, fractional undivided interest in oil, gas, or other mineral rights, or, in general, any interest or instrument commonly known as a "security," or any certificate of interest or participation in, temporary or interim certificate for, receipt for, guarantee of, or warrant or right to subscribe to or purchase, any of the foregoing.

(2) The term "person" means an individual, a corporation, a partnership, an association, a joint-stock company, a trust, any unincorporated organization, or a goverment or political subdivision thereof. As used in this paragraph the term "trust" shall include only a trust where the interest or interests of the beneficiary or beneficiaries are evidenced by a security.

(3) The term "sale," "sell," "offer to sell," or "offer for sale" shall include every contract of sale or disposition of, attempt to offer to dispose of, or solicitation of an offer to buy, a security or interest in a security, for value; except that such terms shall not include preliminary negotiations or agreements between an issuer and any underwriter. Any security given or delivered with, or as a bonus on account of, any purchase of securities or any other thing, shall be conclusively presumed to constitute a part of the subject of such purchase and to have been sold for value. The issue or transfer of a right or privilege, when originally issued or transferred with a security, giving the holder of such security the right to convert such security into another security of the same issuer or of another person, or giving a right to subscribe to another security of the same issuer or of another person, which right cannot be exercised until some future date, shall not be deemed to be a sale of such other security; but the issue or transfer of such other security upon the exercise of such right of conversion or subscription shall be deemed a sale of such other security.

(4) The term "issuer" means every person who issues or proposes to issue any security; except that with respect to certificates of deposit, voting-trust certificates, or collateral-trust certificates, or with respect to certificates of interest or shares in an unincorporated investment trust not having a board of directors (or persons performing similar functions) or of the fixed, restricted management, or unit type, the term "issuer" means the person or persons performing the acts and assuming the duties of depositor or manager pursuant to the provisions of the trust or other agreement or instrument under which such securities are issued; except that in the case of an unincorporated association which provides by its articles for limited liability of any or all of its members, or in the case of a trust, committee, or other legal entity, the

> trustees or members thereof shall not be individually liable as issuers of any security issued by the association, trust, committee, or other legal entity; except that with respect to equipment-trust certificates or like securities, the term "issuer" means the person by whom the equipment or property is or is to be used; and except that with respect to fractional undivided interests in oil, gas, or other mineral rights, the term "issuer" means the owner of any such right or of any interest in such right (whether whole or fractional) who creates fractional interests therein for the purpose of public offering.
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> * * *
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> (7) The term "interstate commerce" means trade or commerce in securities or any transportation or communication relating thereto among the several States or between the District of Columbia or any Territory of the United States and any State or other Territory, or between any foreign country and any State, Territory, or the District of Columbia, or within the District of Columbia.

II. OFFERINGS

(a) *The Nature of a "Public Offering"*

In speaking of a "public offering," the statute refers to transactions which are exempted from registration under the Act in the following manner:

> The provisions of section 77e of this title shall not apply to any of the following transactions: (1) . . . transactions by an issuer not involving any public offering . . .[3]

The paucity of language and the failure of the statute to even hint at what might constitute a "public offering" has proven to be a source of no uncertain concern to both the lawyer and the client. The courts, too, have been plagued no end in determining the legislative intent pertaining to when a "public offering" shall be deemed to exist; in which event compliance with the statute and its registration aspects become mandatory. A resort to the legislative history of the section aids little in clarifying the congressional intent except as may be gleaned from the House Committee's reference to this exemption as permitting "an issuer to make a specific or an isolated sale of its securities to a particular person."[4]

(b) *Administrative Interpretation*

During the early history of the Act, much confusion arose as to the precise meaning of the second clause of Section 4(1) of the Securities Act which exempts "transaction by an issuer not in-

[3] 15 U.S.C. Sec. 77d (1951).
[4] H. R. Rep. No. 85, 73d Cong. 1st Sess. (1933) 15-16.

volving any public offering." Not only was it brought to the attention of the Commission that small issuers were resorting to so-called "private financing" which in many instances was probably in circumvention of the law, but in addition that large issuers were also resorting to this device to the detriment of the public based on their failure to disclose pertinent information relating to the company.

In view of the dearth of either administrative or judicial interpretation at that time of what constituted a "transaction by an issuer not involving any public offering," the Commission through its General Counsel issued an administrative opinion [5] setting forth the various factors which must be considered in determining the availability of this statutory exemption. It also made clear that the determination of what constitutes a "public offering" is essentially a question of fact, in which all surrounding circumstances are to be taken into account. In the opinion, the Commission set forth the following four principal factors for guidance: (1) The number of offerees and their relationship to each other and to the issuer; (2) the number of units offered; (3) the size of the offering; and (4) the manner of offering.

(1) *The Number of Offerees and their Relationship to Each Other and to the Issuer.*

At the outset it should be remembered that there is no precise number of offerees which may be used as an overall guide in determining when a "public offering" exists. It is also important to note that the word "offerees" is not confined to the number of actual buyers, but rather the number of persons to whom the security in question is offered. Succintly stated, any attempt to dispose of a security would be regarded as an offer within the purview of the first principal factor. Preliminary conversations or negotiations may be considered attempts at disposition if a substantial number of prospective purchasers are dealt with. In such case, the offering might be considered a "public offering" with the statutory prerequisite of registration coming into play.[6]

The question then arises as to what constitutes a substantial number of offerees. Actually, there is no mathematical formula precise enough to answer this particular question. But the basis on which the offerees are selected is a factor of major significance in determining whether a "public offering" exists or not. Consequently, an offering to a given number of persons recruited at random from the general populace on the basis that they are possible purchasers may be considered a "public offering," even though an offering to a much larger group of persons who are all the members of a particular class, i.e., employees of a large concern, might be considered a "private offering." On the other hand, there are instances where an offering confined to a particular group and of-

[5] Sec. Act. Rel. 285 (1935).
[6] 15 U.S.C. Sec. 77d (1951).

fered to a sufficiently large number of persons may nevertheless be considered a "public offering."

The relationship between the issuer and the prospective purchasers is also a matter to be given due weight. Concretely, an offering to persons of a group who should have special knowledge of the issuer is less likely to be a "public offering" than is an offering to the members of a class of the same size who do not possess this advantage. In a case where a group of important executive officers would have a close relationship to the issuer which ordinary employees would not enjoy, the factor of relationship would be particularly important in offerings to employees.

(2) *The Number of Units Offered*

In regard to the denominations of the units, the offering of an unsubstantial number of units might presumably be an indication that no "public offering" would be involved. On the other hand, the offering of many units in small denominations might indicate that the issuer recognizes the probability of a distribution of the security to the public at large. At this time, it would be well to again stress the fact that the purpose of the exemption of non-public offerings would appear to have been to make registration unnecessary in those relatively few cases where an issuer desires to consummate a transaction or a few transactions and where the transaction or transactions are of such a nature that the securities in question are not likely to come into the hands of the public at large.

(3) *The Size of the Offering*

A perusal of the language of the statute [7] reveals that the exemption pertains to "transactions by an issuer not involving any public offering." Apropos the wording of this part of the statute, it would be well to consider not merely the immediate particular transactions between the issuer and the initial offerees, but also the likelihood of a later public offering of all or part of the securities sold. It would therefore appear to follow that the statutory exemption was intended to apply mainly to small offerings, which in their very nature are less likely to be offered to the general public than would be large offerings.

(4) *The Manner of Offering*

In view of the fact that the purpose of the exemption of non-public offering is limited in the main to instances wherein the issuer has in mind to consummate a few transactions with specific offerees, it would appear that those transactions which are negotiated by direct contact between the issuer and the initial purchaser are less likely to be considered "public offerings" than those brought about through the utilization of those means normally used for purposes of public sale and distribution.

It should further be kept in mind that any dealer who might

[7] 15 U.S.C. Sec. 77d (1951).

subsequently purchase securities from an initial purchaser would be required to satisfy himself that the initial purchaser had not purchased with a view to distribution. If the initial purchaser had bought with the intent to distribute, he would be considered an underwriter, and sales by a dealer of securities bought by him from such an initial purchaser, would, as a general rule, not be exempt until at least a year after the purchase of the securities by the dealer. The sale of unregistered securities to a limited number of initial purchasers, therefore leads to a practical situation in which such initial purchasers may have difficulty in disposing of the securities purchased by them. Of course, ultimately each case is to be decided on its own facts and no magical formula may be availed of to fit each and every conceivable situation in order to determine whether the situation is one involving a "public offering" or a "private offering."

(c) *Judicial Interpretation*

Although the interpretation by the Commission as to what constitutes a "public offering" is entitled to great weight,[8] it was for the courts to have the final word as to whether a transaction was to be considered either a "private" or a "public" offering. As we move into the judicial sphere of operations we note that the first case of importance to come before the courts to decide whether a transaction was a "private offering" and therefore exempt from registration under the Act was the case of *Securities and Exchange Commission v. The Sunbeam Gold Mines Co. et al.*[9] In that case the defendant Sunbeam Gold Mines Co., a Nevada corporation, with stockholders in various states of the union, entered into an agreement with another company, the Golden West Consolidated Mines, to purchase all the assets of the latter, subject to the approval of the stockholders of both companies. While the agreement was pending this approval, the defendant company issued through the mails a number of letters—530, to be exact. Of the 530 recipients, 115 were stockholders of the defendant Sunbeam Company; 207 were stockholders of the Golden West Mines; and 208 were stockholders of both companies. These 530 persons were scattered through various states. The letters solicited pledge loan agreements from the stockholders for the purposes of completing the purchase by the Sunbeam Company of the assets of the Golden West Mines and of raising enough money to register a contemplated new issue of stock with the Securities and Exchange Commission. On the basis of these facts, the Commission brought this suit under Section 20(a) of the Act[10] authorizing injunctions against issuance of securities in violation of the Act.

Although the court below, in denying an interlocutory injunction, held that the shareholder's loan receipt was a security within

[8] Campbell v. Degethner, 97 F. Supp. 975, 977 (1951).
[9] 95 F. 2d 699 (C.C.A. Wash.) 1938.
[10] 15 U.S.C. Sec. 77t(a).

the meaning of the Act and that its distribution through the mails over state lines did make it subject to the required registration proceedings, it nevertheless held that such a distribution to stockholders did not involve a "public offering." The language of its conclusion of law is:

> The transactions by the defendants herein, being solely with stockholders of Sunbeam Gold Mines Co. and Golden West Consolidated Mines, all of said stockholders being stockholders of respondent company through merger of said corporations, do not, irrespective of the number of said stockholders, involve a public offering within the meaning of Sec. 4(1) of the Securities Act of 1933, as amended; and the plaintiff's application for preliminary injunction is therefore denied.

On appeal to the Circuit Court of Appeals of the Ninth Circuit, the Appellate Court reversed the lower court and held that the offering of securities was a "public offering" and hence not within the exception to the requirements of the Securities Act of 1933. In coming to this conclusion that the offering involved herein was a public one, the court proceeded to trace the legislative history of the section. In one of the House Reports [11] the court restated the language of the House, to-wit:

> Sales of stock to stockholders become subject to the Act unless the stockholders are so small in number that the sale to them does not constitute a public offering.

In further tracing the legislative history of the section pertaining to "public offerings," the court went on to say:

> Again, in 1934, when the Securities Act was amended, 15 U.S.C.A. Sec. 77b et seq. and notes, a proposal to exempt from registration securities offered by an issuer to its employees was rejected by the Committee of Conference of the two Houses. In this connection, the Managers on the part of the House stated: "The conferees eliminated the third proposed amendment to this subsection on the ground that the participants in employees' stock-investment plans may be in as great need of the protection afforded by availability of information concerning the issuer for which they work as are most other members of the public." H.R. Rep. No. 1838, 73d Cong., 2d Sess., p. 41.
>
> These Reports clearly demonstrate that the Congress did not intend the term "public offering" to mean an offering to any and all members of the public who cared to avail themselves of the offer, and that an offering to stockholders, other than a very small number, was a public offering.

[11] H. R. Rep. No. 152, 73d Cong. 1st Sess. (1933) 25.

> Cases are cited by the appellees in which are given interpretations of the word "public" in regulatory statutes. None is shown to have the legislative history of the Securities Act and none applies the rule of strict construction of the instant exception to the general policy of the legislation required by the Supreme Court.
>
> We therefore hold that an offering of securities under the Securities Act of 1933 may be a public offering though confined to stockholders of an offering company, a fortiori where the offerees include the stockholders of another company, though seeking to become stockholders of the offeror.[12]

In this case, the court also pointed out that an issuer of corporate stock who pleads the exemption from registration requirments afforded to transactions not involving any "public offering," has the burden of proving that a "public offering" was not involved. The issuer in this case had clearly failed to establish his burden of proof.

In 1943, another case of importance pertaining to the question of a "public offering" came before the same Appellate Court.[13] In this case, the appellant, who was President of the Merger Mines Corporation, lent to the said corporation 772,541 shares of stock of the said corporation, which were to be used to satisfy the company's stock liability to certain other companies and also its liability to other creditors. It was understood that the articles of incorporation would be amended so as to increase the stock authorization by a million shares, and that the stock would be returned to appellant out of the "new issue of stock."

Acting as amicus curiae, the Securities and Exchange Commission filed a brief addressed solely to the proposition that the court below erred when it decreed that the stock to be offered to appellant and to the 1100 other stockholders of the company need not be registered with any governmental regulatory body. It was argued that, although Section 3(a) (10) of the Securities Act of 1933, as amended,[14] exempts any security that was issued in exchange for outstanding securities or other interests where the terms of issuance and exchange are approved by a court or other proper governmental authority after a prescribed hearing; that in the present case the court found that no such hearing had been held. The court went on to say:

> The hearing must be one "at which all persons to whom it is proposed to issue securities in such exchange shall have the right to appear." No one contends that the requirements for such a hearing have been met in the case at bar; for the section provides that the hearing

[12] 95 F. 2d 699, 702 (C.C.A. Wash.) 1938.
[13] 137 F. 2d 335 (C.C.A. Wash.) 1943.
[14] 15 U.S.C. Sec. 77c(a)(10) (1933).

shall be specifically upon the "fairness" of the "terms and conditions" that are "approved" by the court or other authority.

The Commission then argued that the proposed stock issue did not come within the exemptions of Sec. 4(1) of the Act,[15] which reads as follows:

> Section 4. The provisions of section 5 (making unlawful the failure to register) shall not apply to any of the following transactions:
>
> (1) Transactions by any person other than an issuer, underwriter, or dealer; transactions by an issuer not involving any public offering; or transactions by a dealer (including an underwriter no longer acting as an underwriter in such transaction), except transactions within one year after the first date upon which the security was bona fide offered to the public by the issuer or by or through an underwriter (excluding in the computation of such year any time during which a stop order issued under section 8 is in effect as to the security), and except transactions as to securities constituting the whole or a part of an unsold allotment to or subscription by such dealer as a participant in the distribution of such securities by the issuer or by or through an underwriter.

The Commission also urged that the foregoing provision did not exempt the proposed offering of the company's stock to the 1100 stockholders and cited the *Sunbeam Gold Mines* case in support of its contention.

The Commission further argued that Sec. 4(1) did not exempt any public offering by appellant of the stock acquired by him for resale, for in that event appellant would come within the definition of "underwriter" in Sec. 2(11) of the statute,[16] the pertinent part of that section reading as follows:

> The term "underwriter" means any person who has purchased from an issuer with a view to, or sells for an issuer in connection with, the distribution of any security . . .

The court then went on to say:

> As the amicus curiae brief points out, the appellant Pearson will probably reoffer to the public at least a part of the shares that they acquire from the company. Accordingly, registration would have to be effected by the appellant corporation before the shares could be reoffered by Pearson.
>
> Furthermore, there is no need for the decree in this case to contain any reference to registration in connec-

[15] 15 U.S.C. Sec. 77d(1) (1933).
[16] 15 U.S.C. Sec. 77b(11) (1933).

tion with Pearson's allotment of the stock. If they take the shares with the view to investment, the exemption will apply by operation of law. If, on the other hand, they acquire the shares with a view to reselling them to the public, section 4(1) will have to be enforced regardless of any attempted exemption set out in the decree.

The court concluded its decision with the following language:

The decree of the court below should be modified so as to eleminate any reference to exemption from registration "with any governmental regulatory body . . ."[17]

That same year, 1943, another case of significance was brought for decision before the Federal Court. That case was *Corporation Trust Co. v. Logan.*[18] In that case, the facts disclosed that certain persons as owners of 373,791 shares of Class B stock of Missouri-Kansas Pipe Line Company, a Delaware corporation (herein called "Mokan"), entered into a Voting Trust Agreement dated April 12, 1943. On July 22, 1943, the shares of stock were delivered for deposit with the Industrial Trust Company of Wilmington, the agent named in the agreement. Instruction letters and signed stock powers were deposited along with the shares. After copies of the trust agreement were filed at the offices of Mokan and Industrial Trust Company, the latter as agent issued temporary Voting Trust Certificates for delivery to the depositing stockholders in exchange for their shares in Mokan. There was no understanding between the stockholders for a registration statement or any attempt to comply with the Securities Act of 1933. The defendants thereafter tendered their temporary Voting Trust Certificates and asked the Court to decree that their original issuance was illegal.

The essence of their cross claim, as amended, was that there was a total failure to comply with the Federal Securities Act of 1933 [19] in connection with the creation of the Voting Trust Agreement. And since the issuance of Voting Trust Certificates under that agreement was in violation of law, the exchange of securities thereunder should be rescinded and set aside.

The Court held that the Voting Trust Agreement for the issuance of Voting Trust Certificates in exchange for the stock of the corporation which had an authorized capitalization of 5,000,000 shares, of which about 800,000 shares were outstanding among 3,500 holders, contemplated the issuance of "securities" in connection with a "public offering" within the Act. In rendering its decision, the Court used the following language:

It is clear that the case at bar comes within the first classification of Sec. 12 which relates to unlawful sales

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[17] Merger Mines Corporation et al. v. Grismer, 137 F. 2d 335, 341, 342 (C.C.A. Wash.) 1943.

[18] 52 F. Supp. 999 (1943).

[19] 15 U.S.C. Sec. 77a *et seq.* (1933).

> of securities for which no registration statement has been filed. Under that section, the remedy afforded is the right to sue, either in law or in equity, "to recover the consideration paid for such security . . ." As the Voting Trust Certificate is, under the statute, the security, the consideration paid in exchange therefor can only be the Mokan stock, and it is this stock which defendants seek to have restored to them upon the tender of their trust certificates. I conclude the statute authorizes the relief prayed for here.

The next case of importance to come before the Federal Court was the case of *Campbell v. Degenther*.[20] This too was an action under the Securities Act of 1933[21] to recover the consideration paid for undivided interests in oil well drilling operations. The facts disclose that the defendant was engaged in the drilling for oil and gas in the State of Michigan. To finance the projects, undivided interests in the leases which he held were sold to various persons, among whom were the plaintiffs.

The business venture was not advertised nor was any other means employed to disseminate the information to the general public. The parties became acquainted through mutual business associates and the investments of the plaintiffs with the defendant produced commercially productive wells in some instances.

The problem that came about in this case arose out of the investments made by the plaintiffs with the defendant in the drilling of Howard Well No. 1. There were 32 shares sold in said well at a cost of $127.40 per share. Each of the plaintiffs purchased one share or a one thirty-second interest. The well was drilled in as a dry hole.

Plaintiffs contend that prior to the sale of said interests there was no registration statement in effect nor any prospectus issued as required by Section 5 of the Securities Act.[22]

By the terms of the Securities Act, plaintiffs ask to recover the consideration paid for said security, with interest thereon from April 9, 1948, less the amount of income received thereon, upon tender of such security.

The Court held that each of the plaintiffs was not entitled to recover the amount paid for the undivided one thirty-second interest in Howard Well No. 1. In summing up its decision, The Court stated the following:

> The defendant has satisfied the required burden of proof to establish himself as exempt from the provisions of the Securities Act of 1933. By reason of the small number of participants in the venture and their familiar-

[20] 97 F. Supp. 975 (1951).
[21] 15 U.S.C. Sec. 77a *et seq.*
[22] 15 U.S.C. Sec. 77(e) (1951).

ity with each other, I cannot translate the security transactions into a public offering.

At most, the transactions herein conducted were a close-knit arrangement among friends and acquaintances on a purely personal basis, without any systematic scheme or promotion program for sale of said securities to the general public or any select group sufficient in size to fall within the province of a public offering.

Another case of importance came before the United States District Court for the District of Nevada during the early part of 1953. That was the case of *Securities and Exchange Commission v. Searchlight Consolidated Mining & Milling Co.*[23] The facts in that case disclosed that the defendants had been selling securities, namely, shares of the common capital stock, 10¢ par value, of defendant, Searchlight Consolidated Mining & Milling Co.; and in the sales of such securities had been directly and indirectly using the mails and means and instruments of transportation and communication in interstate commerce. And at no time had a registration statement with respect to such securities been in effect with the Securities and Exchange Commission.

One of the specifications in the motion to dismiss raised by the defendants was that solicitation by the defendants was confined to existing stockholders, and that such stockholders were not to be considered as members of the public.

The Court made short shrift of this contention by the defendants and held that the offering of securities was a "public offering" and therefore not within exemptions to the provisions of the Act requiring disclosure of information even though solicitation was confined to existing stockholders. Again, the *Sunbeam Gold Mines* case was cited by the Court in support of its holding.

Despite the adjudications of the Federal Courts on the question of "private" or "public" offering, no tangible criteria evolved as a guide of reliability from these decisions. No specific formulae were set forth by any of the judicial tribunals before whom such cases were brought for adjudication.

Finally, on June 8, 1953, the leading case on the subject of "public offering" was decided by the Supreme Court of the United States. That case was *Securities and Exchange Commission v. Ralston Purina Co.*[24] The facts in that case disclosed that Ralston Purina sold nearly $2,000,000.00 of stock to employees of the company residing in many different states without registering with the Securities and Exchange Commission. In so doing, it had made use of the mails. The Ralston Company contended that the shares were sold only to key personnel in keeping with its policy of encouraging its employees to become stockholders of the corporation.

[23] 112 F. Supp. 726 (1953).
[24] 346 U.S. 981 (1953).

Both the District Court [25] and the Circuit Court [26] held that the offering was a "private offering" and within the exemption of the Act.[27]

The Supreme Court reversed the lower courts and held that the issue was not a "private offering" within the exemption of the Act. In its decision, the Supreme Court said that some employee offerings may be exempt. For example, an offering limited to executive personnel who because of their position have access to the same kind of information that the Act would make available in the form of a registration statement, would come within the exemption. The number of persons to whom the offer is made does not determine whether the offering is "public" or "private." The Supreme Court laid down four criteria to determine whether the offering is "private" or "public". If the offering comes within these criteria, it is a "private offering" and not a "public offering." The criteria are:

> (1) That the offering is limited to a special class and not to the public generally;
>
> (2) That the purchasers of the shares intend to take the shares for investment and not for resale;
>
> (3) That the purchasers have access to the kind of information which a registration statement would disclose;
>
> (4) Whether there is a need of the offerees as a class for protection afforded by registration.

In its decision, the Supreme Court of the United States held that the Ralston Purina Co. failed to prove that its offering to employees came within the criteria establishing a private offering. The offering was not limited to key personnel but was made available to any one of its 7,000 employees. The exemption, the Court said, does not deprive corporate employees from the safeguards of the Act. A thorny problem had at last received a final adjudication.

III. CONCLUSION

In answer to the original query, it may now be stated that whether or not a proposed offering or sale of securities of a corporation in interstate commerce is "private" or "public" ultimately depends upon whether the issuer can sustain the burden of proving facts sufficient to make the offering a "private offering" within the tests of the *Ralston Purina* case as laid down by the Supreme Court of the United States. It is hoped that the decision in this case and the criteria enumerated by the highest court of the land will prove a beacon of light for future guidance to both Bench and Bar in resolving the time honored question of "private" or "public" offering.

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[25] 102 F. Supp. 964 (1952).
[26] 200 F. 2d 85 (8th Cir. 1952).
[27] 15 U.S.C. Sec. 77d(1) (1951).

Notes From The Secretary

President Thomas K. Younge received over 400 requests for assignment to Colorado Bar Association committees. Unfortunately, he could not satisfy all requests. The assignments will be mailed to the new committee members within the next few weeks, and the names of the members on the new committees will be published in the Annual Report that should be out by the end of this year.

Because there was such a demand for the Mining Law and Oil & Gas Committees, approval has been granted by the Board of Governors to enable these committees to become sections. These sections will be in operation during the end of this fiscal year and will provide an opportunity for more members of the Association to become active in these fields of the law.

CANON 7. PROFESSIONAL COLLEAGUES AND CONFLICTS OF OPINION

A client's proffer of assistance of additional counsel should not be regarded as evidence of want of confidence, but the matter should be left to the determination of the client. A lawyer should decline association as colleague if it is objectionable to the original counsel, but if the lawyer first retained is relieved, another may come into the case.

When lawyers jointly associated in a cause cannot agree as to any matter vital to the interest of the client, the conflict of opinion should be frankly stated to him for his final determination. His decision should be accepted unless the nature of the difference makes it impracticable for the lawyer whose judgment has been overruled to co-operate effectively. In this event it is his duty to ask the client to relieve him.

Efforts, direct or indirect, in any way to encroach upon the business of another lawyer, are unworthy of those who should be brethren at the Bar; but, nevertheless, it is the right of any lawyer, without fear or favor, to give proper advice to those seeking relief against unfaithful or neglectful counsel, generally after communication with the lawyer of whom the complaint is made.

OPINION 10—A lawyer may accept employment to handle a matter which had previously been handled by another attorney, provided that the other lawyer has been given notice that his employment has been terminated.

OPINION 130—A lawyer who was not informed that his client had previously employed another lawyer may proceed with the case, though he learns at the time set for trial that the other lawyer had been employed.

OPINION 209—A lawyer may accept employment in a case where another lawyer appeared of record and his employment has been terminated by the client.

(Continued on Page 396)

THE SCOPE OF THE PHRASE "INTERSTATE COMMERCE"—SHALL IT BE REDEFINED?

By THOMAS A. GILLIAM, *of the Colorado Bar*

"It is to Marshall that we turn for the description of the power confided to Congress and its scope."—Chief Justice Hughes.[1]

Occasionally, judges are badgered by Philadelphia lawyers into a rather extraordinary position. In 1946, *Prudential Insurance Company v. Benjamin*[2] was decided by the Supreme Court, a case which calls for some redefinition of Article I, Section 8, Clause 3 of the United States Constitution:

> The Congress shall have Power . . . To regulate Commerce with foreign Nations, and among the several States, and with the Indian Tribes.

The *Prudential* case upheld the validity of the McCarran Act[3] enacted in view of *United States v. Southeastern Underwriters Association*,[4] in which the Court had declared that insurance is an interstate business. Since before the latter decision, insurance was generally thought not subject to the commerce clause, notably an implication derived from *Paul v. Virginia*[5] the states had evolved regulation of this phase of commerce, which Congress, by the McCarran legislation, sought to implement and develop. The effect of the Act was to declare, "that the continued regulation and taxation by the several States of the business of insurance is in the public interest, and that silence on the part of Congress shall not be construed to impose a barrier" to such regulation or taxation.

In sustaining the validity of the Federal legislation, Mr. Justice Rutledge also answered the attacks made by the insurance company on a state tax law, which for purposes of discussion he assumed to be discriminatory:[6]

> Here both Congress and South Carolina have acted,

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[1] The Supreme Court of the United States, 143 (1928).

[2] 328 U. S. 408, 66 S. Ct. 1142, 90 L. Ed. 1342, 164 A. L. R. 476.

[3] 59 STAT. 33, 15 U. S. C. A. 1011-1015 (1945).

[4] 322 U. S. 533, 64 S. Ct. 1162, 88 L. Ed. 1440 (1944); rehearing denied in 323 U. S. 811, 65 S. Ct. 26, 89 L. Ed. 646 (1944).

[5] 75 U. S. 168, 8 Wall. 168, 19 L. Ed. 357 (1869); Hooper v. California, 155 U. S. 648, 15 S. Ct. 207, 39 L. Ed. 297 (1895). For a similar situation in baseball, *cf.* Federal Baseball Club of Baltimore v. National League of Professional Baseball Clubs, 259 U. S. 200, 42 S. Ct. 465, 66 L. Ed. 898 (1922), and Gardella v. Chandler, 172 F. 2d 402 (2nd Cir., 1949).

[6] Prudential Insurance Co. v. Benjamin, 328 U. S. 408, note 2 *supra*, 429. While Amendment XIV, Sec. 1, provides that no person shall be denied by a state the equal protection of its laws, this to Rutledge was a dangerous blurring of ideas. See Robertson v. People of the State of California, 328 U. S. 440, 66 S. Ct. 1160, 90 L. Ed. 1366 (1946); *Cf.* Nebbia v. New York, 291 U. S. 502, 54 S. Ct. 505, 78 L. Ed. 940, 89 A. L. R. 1469 (1934); Crandall v. Nevada, 73 U. S. 35, 6 Wall. 35, 18 L. Ed. 744 (1868); Edwards v. California, 314 U. S. 160, 62 S. Ct. 164, 86 L. Ed. 119 (1941) Douglas, concurring opinion.

> and in complete coordination, to sustain the tax. It is therefore reinforced by the exercise of all the power of government residing in our scheme.[7]

And with reference to constitutional attacks made by Prudential [8] on the Congressional legislation itself, his answer was even more out of the ordinary to the effect that these arguments are:

> On the theory that no more has occurred than that Congress has "adopted" the tax as its own, a conception which obviously ignores the state's exertion of its own power and, furthermore, seeks to restrict the cooridnated exercise of federal and state authority by a limitation applicable only to the federal taxing power *when it is exerted without reference to any state action.*[9] (Italics supplied.)

And while state action was not elevated to the same plane as the congressional, the effect is virtually the same.[10] This superstate idea appears elsewhere in the opinion with reference to federal-state action. A *gestalt* results, the whole is greater than its parts. To justify this conclusion Justice Rutledge reflected that beginning with *Gibbons v. Ogden,*[11] in the silence of Congress, *i.e.,* when that body has not acted under the great powers given it by the commerce clause, the Court has often taken the initiative. The author of *Gibbons v. Ogden,* Justice Rutledge, explained in a footnote quote was obliged to do so by necessity, saying, "Judges legislate interstitially and the interstices were great in Marshall's time." [12]

Although there have been times when Congress had not agreed with the efforts of the Court as a substitute legislature, and had later disavowed the legislation; nevertheless he went on:

> The fact remains that, in these instances, the sustaining of Congress' overriding action has involved something beyond correction of erroneous factual judgment in deference to Congress' presumably better-informed view of the facts and also beyond giving due deference to its conception of the scope of its powers, when it repudiates,

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[7] *Id.* at 435-436.

[8] Of this it was said at p. 412, "The versatility with which the argument inverts state and national power, each in alternation to ward off the others incidence, is not simply a product of protective self-interest. It is the recurring manifestation of the continuing necessity in our federal system for accommodating the two great basic powers it comprehends."

[9] *Id.* at 438.

[10] Note 6 *supra.*

[11] 22 U. S. 1, 9 Wheat. 1, 6 L. Ed. 23 (1824).

[12] Prudential Ins. Co. v. Benjamin, 328 U. S. 408, 413, note 2 *supra,* citing Ribble, *State and National Power Over Commerce* 47. Ribble's paper grew out of Dean Stone's assignment, note 68 *post.*

just as when its silence is thought to support, the inference that it has forbidden state action.[13]

This "something beyond" involved is never quite explained,[14] but an act of Congress had never before been elevated above the Constitution. Marshall saw to that.[15] Perhaps the Court was saying that the origin of its own power to act in the silence of Congress is obscure, and if Congress speaks what authority have we to say, nay? Chief Justice Hughes once said, "the Constitution is what the judges say it is,"[16] but isn't it another matter, altogether, to say that the Constitution is what the Congress says it is when it sanctions state action? Justice Rutledge, nevertheless, felt that such sanction was supported by "the whole trend of decision." [17] Equally obscure, however, as the source of the Court's power in the silence of Congress, is in coexistence with the former, the origin of the power of Congress to enable the states to do that which they otherwise could not.[18] Perhaps what Rutledge meant was that, when the states and federal government form a partnership in regulation, something in the nature of a treaty results. If this be the case the necessity of redefinition is manifest, or at least a historical reexamination of the trend of decision is indicated, and since as all these matters troubled Marshall in the great case of *Gibbons v. Ogedn,* it might be advisable to turn first, as all decisions do, to that decision.

THE SCOPE OF THE POWER

Marshall has been much maligned.[19] He has left the impression of being the true apostle of federalism, the autocrat of the bench, the uncompromising figure of judicial supermacy. Never a popular figure, he filled the bill. And yet in *Gibbons v. Ogden,* his only popular decision,[20] and in *Willson v. Blackbird Creek Marsh Co.*[21] he possibly indicated, at the beginning, the whole scope of the commercial power, and upon review, as reexamination of legends often do, the impression left by Marshall is somewhat different from that assumed.

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[13] *Id.* at 425-426.

[14] An explanation possibly lies in Article 1, Sec. 10, Cl. 2 of the CONSTITUTION: No State shall, without the consent of Congress, lay any Imposts or Duties on Imports or Exports, except what may be absolutely necessary for executing its Inspection Laws.

[15] Marbury v. Madison, 5 U. S. 137, 1 Cranch. 137, 2 L. Ed. 60 (1803).

[16] Cited by Abel, *Commerce Regulation Before Gibbons v. Ogden; Interstate Transoprtation Facilities,* 25 N. CAR. L. R. 12 (1947).

[17] Prudential Ins. Co. v. Benjamin, 328 U. S. 408, 433, note 12 *supra.*

[18] Murphy, *Insurance Under the Commerce Clause.* 33 IA. L. R. 91, 100 (1947).

[19] See Abel, *Commerce Regulation Before Gibbons v. Ogden, Trade and Traffic,* 14 BROOKLYN L. R. 38, 215 (1941); Green, *Some Heretical Remarks on the Federal Power Over Commerce.* 31 MINN. L. R. 121, 148 (1947).

[20] Mendelson, *New Light on Fletcher v. Peck and Gibbons v. Ogden,* 58 YALE L. J. 567 (1949).

[21] 27 U. S. 245, 2 Pet. 245, 7 L. Ed. 412 (1829).

Gibbons v. Ogden did not involve an instance of a state acting where Congress had not; on the contrary, a monopoly created by state law, on steamship traffic on the Hudson was dissolved by that decision as being in conflict with federal licensing legislation. As Marshall pointed out, "The sole question is, can a state regluate commerce with foreign nations and among the states, while congress is regulating it?" [22] The answer to this question, counsel for the monopoly urged, was that the states have concurrent power in regulating commerce:

> It is remarkable that even the definite article "the" is omitted. . . . And this omission was not accidental, but studiously made. By referring to the journals of the Federal convention, it will be found, that the sixth article of Mr. Charles Pinkney's draft has the words "shall have the power," etc. In the draft reported by the committee of five (art. 7) the definite article is still preserved. In the draft as reported by Mr. Brearly the word "the" is left out, clearly by design. Notwithstanding that, Mr. Patrick Henry and Mr. George Mason, and indeed, the opposers of the constitution generally, thought . . . that when power was given, it was "exclusively given." . . . This construction, which was the general foundation of the opposition to the constitution, was strenuously disavowed and reasoned against in the Federalist, and actually produced the tenth article of the amendment.[23]

It was Justice Johnson in a separate opinion, and not Marshall, who said that the power was exclusive in Congress, and answered the above argument with a lawyer's answer:

> It is not material, in my view of the subject to inquire whether the article a or the should be prefixed to the word "power." Either, or neither, will produce the same result; if either, it is clear, that the article "the" would be the proper one, since the next preceding grant of power is certainly exclusive, to wit, "to borrow money on the credit of the United States." [24]

That such power was concurrent, Marshall, however, also refused to accept, for this would be to imply that the states and the Union were equal sovereignties, and that the sovereign which exercised the power first would prevail. Marshall was aware, of course, of the many instances even in his own time where the states and the federal government had cooperated and some instances at least

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[22] Gibbons v. Ogden, 22 U. S. 1, 200, note 11 *supra*. And at 211, "In pursuing this inquiry at the bar, it has been said, that the Constitution does not confer the right of intercourse between state and state .. . This is true. The Constitution found it an existing right, and gave to Congress the power to regulate it. In the exercise of this power, Congress has passed 'an act . . . '"

[23] *Id.* at 85.

[24] *Id.* at 226-227.

where the government had adopted state law.[25] Examples, which he cited, were Acts of Congress of 1796 and 1799 preventing the importation of slaves into states prohibiting slavery,[26] and the Act of August 7, 1789, adopting state law on the conduct of pilots.[27] Of these he spoke:

> Congress, in that spirit of harmony and conciliation which ought always to characterize the conduct of governments standing in the relation which that of the Union and those of the states bear to each other, has directed its officers to aid in the execution of these laws; and has, in some measure, adapted its own legislation to this object, by making provisions in aid of those of the states.[28]

And again:

> Although Congress cannot enable a state to legislate, Congress may adopt the provisions of a state on any subject.[29]

But then he added:

> The nullity of any act inconsistent with the constitution, is produced by the declaration, that the constitution is the supreme law. The appropriate application of that part of the clause which confers the same supremacy on laws and treaties, is to such acts of the state legislatures, as do not transcend their powers . . .[30]

It is apparent that the great judge did not subscribe to any theory that congressional legislation adopting state legislation tended to put both beyond the Constitution. What then was this power of Congress over commerce? As to this he said:

> We are now arrived at the inquiry, what is this power?
>
> It is the power to regulate; that is, to prescribe the rule by which commerce is to be governed. This power, like all others vested in Congress, is complete in itself, may be exercised to its utmost extent, and acknowledges no limitations, other than are prescribed in the constitution.[31]

And while in other parts of the opinion he described commerce as "intercourse" [32] and the power of Congress over it as "plenary," [33] and thus "described the federal commerce power with a

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[25] *Id.* at 205-209.
[26] I U. S. STAT. 474, 619.
[27] R. S. 4235, 46 U. S. C. A. 211 *et seq.*
[28] Gibbons v. Ogden, 22 U. S. 1, 205, note 11 *supra.*
[29] *Id.* at 207.
[30] *Id.* at 211.
[31] *Id.* at 196.
[32] *Id.* at 189.
[33] *Id.* at 197.

breath never yet exceeded," [34] merely because he declined to define the power as "concurrent" does not mean he defined it as "exclusive," [35] except to the extent that when exercised exclusively by Congress, it became, under the supremacy clause, the supreme law of the land, subject, of course, to the Constitution. And while the commerce clause is in the Constitution itself, it is an express power which has no life sleeping.[36] The power of Congress is to legislate into being such as it wills from the grant of power given it by the people:

> The Congress shall have Power: . . . To make all laws which shall be necessary and proper for carrying into Execution the foregoing Powers, and all other Powers vested by this Constitution in the Government of the United States, or in any Department or Officer thereof.[37]

This was decided by Marshall in *Willson v. Blackbird Creek Marsh Company,*[38] and in this case, as contrasted with *Gibbons v. Ogden,* the silence of Congress was involved. A dam, prusuant to state law, had been placed over a navigable stream, and he was of the opinion:

> The repugnancy of the law of Delaware to the constitution is placed entirely on its repugnancy to the power to regulate commerce with foreign nations and among the several states; *a power which has not been so exercised as to affect the question.*
>
> We do not think that the act . . . can, under all the circumstances of the case, be considered as repugnant to the *power to regulate commerce in its dormant state,* or as being in conflict with any law passed on the subeject.[39] (Italics supplied.)

Now why did Marshall say the latter after deciding the former? They are inconsistent views. The statement even acquires a certain oracle-like quality. Was it that he foresaw the enormous power the Supreme Court could wield under such a doctrine as the silence of Congress, or was he merely saying that it was only a paper power until exercised? The latter is suggested in view of what was said by him of Congress in other cases, with reference to the habeas corpus power of the courts:

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[34] Wickard v. Filburn, 317 U. S. 111, 63 S. Ct. 82, 87 L. Ed. 122 (1942); and Levy, OUR CONSTITUTION TOOL OR TESTAMENT? 48, "a far more extensive national control of business than we have yet been allowed by 'the Court to witness'" (1941).

[35] *Cf.* Rutledge in Freeman v. Hewit, 329 U. S. 249, 262 (1946); rehearing denied 329 U. S. 249, 67 S. Ct. 497, 91 L. Ed. 705 (1947).

[36] *Cf.* Frankfurter, *id.* at 254.

[37] Article I, Sec. 8, Cl. 18, U. S. CONSTITUTION. The Commerce power is among the foregoing Powers.

[38] 27 U. S. 245, note 21 *supra.*

[39] *Id.* at 252.

> . . . they must have felt, with peculiar force, the obligation of providing efficient means by which this great constitutional privilege should receive life and activity; for if the means be not in existence, the privilege itself would be lost, although no law for its suspension should be enacted.[40]

CONGRESSIONAL SILENCE

The Chief Justice decided another case, *Brown v. Maryland,*[41] purportedly bearing on the commerce clause, and participated, according to Justice Story in another, *City of New York v. Miln,*[42] neither of which would add to the discussion here. It is of interest to note, however, that Roger Taney, who as an advocate had unsuccessfully argued before Marshall on behalf of the taxing power of a state in *Brown v. Maryland,* himself, as Chief Justice, rendered the next important decision with reference to the commerce clause in *The License Cases.*[43] In these cases, he analyzed *Gibbons v. Ogden* in the light of *Willson v. Blackbird Creek Marsh Company* and said, "The passages I have quoted show that the validity of the State law was maintained because it was not in conflict with a law of Congress, although it was confessedly within the limits of the power granted." [44] Marshall, therefore, according to Taney, never maintained that the federal commercial power was exclusively vested in Congress in the absence of congressional legislation.

The view persisted, none the less, that he did, possibly perhaps of his rather deprecatory remarks in *Gibbons v. Ogden* [45] as to the police power of the state, and in *Cooley v. Board of Wardens,*[46] what was apparently believed to be a Solomon decision between Marshall and Taney [47] was handed down in the form of the following dictum:

> It is the opinion of the majority of the court that the mere grant to Congress of the power to regulate commerce, did not deprive the states of power to regulate pilots, and that although Congress has legislated on this subject, its legislation manifests an intention, . . . not to regulate this subject, but to leave its regulation to

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[40] *Ex Parte* Bollman and *Ex Parte* Swarthout, 8 U. S. 75, 4 Cranch. 75, 2 L. Ed. 554 (1807).

[41] 25 U. S. 419, 12 Wheat. 419, 6 L. Ed. 678 (1827). Marshall's observations here on the commerce clause come under the heading of dicta; the case was decided on the supremacy of the tax power of Congress, McCulloch v. Maryland, 17 U. S. 316, 4 Wheat. 316, 4 L. Ed. 519 (1819).

[42] 36 U. S. 102, 11 Pet. 102, 9 L. Ed. 648 (1837).

[43] 46 U. S. 504, 12 L. Ed. 256, 5 How. 504 (1847).

[44] *Id.* at 584.

[45] 22 U. S. 1, 203, note 11 *supra.*

[46] 53 U. S. 299, 12 How. 299, 13 L. Ed. 996 (1851).

[47] Haman, Comment on Dean Milk Company v. City of Madison, 340 U. S. 349, 71 S. Ct. 295, 95 L. Ed. 329 (1950). 8 WASH. & LEE L. R. 202 (1951).

> the several states. To these precise question, . . . this opinion must be understood to be confined. It does not extend to the question what other subjects, under the commercial power, are within the exclusive control of Congress . . .[48]

By *Munn v. Illinois*,[49] in an opinion delivered by Chief Justice Waite, this dictum had grown:

> . . . certainly, until Congress acts in reference to their interstate relations, the State may exercise all the powers of government over them. . . . We do not say that a case may not arise in which it will be found that a State, under the form of regulating its own affairs, has encroached upon the exclusive domain of Congress . . .

Then in *Mobile County v. Kimball*,[50] in an opinion rendered by Justice Field, it was said that the federal commerce power was exclusive so as far as a *uniform* rule is required but that Congress by silence in the regulation of harbors, virtually declared that such may be controlled by state authority. While this decision does not conflict in practice with *Willson v. Blackbird Marsh Company*, it conflicts in theory—e.g., Marshall upheld state law because Congress had not legislated; Field upheld state law because the Supreme Court felt that, considering other instances where state regulation had been adopted by Congress, the latter would have acted as the Court did. Thus the foundation laid by dicta was solidifying into a structure for judicial legislation. It was but a short step for Field to concur as he did with Justice Matthews, who spoke for the Court in *Bowman v. Chicago and Northwestern Railway Company*,[51] a case declaring that state legislation, forbidding common carriers from importing intoxicating liquor into the state without a certificate therefor, was invalid, because the *consent* of Congress express or implied was missing; in other words, the Court felt that had Congress spoken, it would have required a national uniform rule. Justice Harlan, with whom Chief Justice Waite and Justice Gray concurred, dissented, and Justice Lamar did not participate in the *Bowman* decision, which introduced yet another word into the commerce clause, the word, "consent," was not there.[52] The dissenters spoke in vain of the departure of the Court from the Constitution and precedent:

> . . . if therefore, state police power, as the health, morals and safety of the people may be involved in its

[48] Cooley v. Board of Wardens, 53 U. S. 299, 320, note 46 *supra*.

[49] 94 U. S. 113, 24 L. Ed. 77 (1877). Waite renounced this dicta in Bowman v. Chicago and Northwestern Railway Company, note 53 *post*.

[50] 102 U. S. 691, 26 L. Ed. 238 (1880). The idea of uniformity is probably derived from Art. I, Section 8, Cl. 4, of the CONSTITUTION, relating to naturalization and bankruptcy, and which is the next succeeding clause to the commerce clause.

[51] 125 U. S. 465, 8 S. Ct. 869, 31 L. Ed. 700 (1888).

[52] The word is probably derived from Article I, Sec. 10, Cls. 2, 3 of the CONSTITUTION.

> proper exercise, can be overborne by national regulations of commerce, the former decisions of this court would seem to show that such laws of the States are valid, even when they affect commercial intercourse among the States, until displaced by Federal legislation, or until they come in direct conflict with some Act of Congress. Such was the doctrine announced in Willson v. Blackbird Creek Marsh Co.[53]

In *Leisy v. Hardin* a similar question as to the power of a state to prohibit the liquor traffic was before the Court, as was presented in the previous case, but the majority decision unfortunately was the same.[54] Fuller, its author, had joined the Court as Chief Justice; and perhaps the though of judicial legislation was too tempting a morsel to the new Chief. And it is noteworthy that the assumption of the majority in both cases, that had Congress acted it would have enacted a uniform rule, was mistaken because Congress thereafter enacted the Wilson Act,[55] adopting the diverse treatment of states, congressional legislation which Chief Justice Fuller was obliged to uphold.[56] With this setback, the Court, however, took the next obvious step—If there were an exclusive jurisdiction in the Congress under the commerce power, there was also an exclusive residue in the states, and an act of Congress, which invaded the latter, could be limited to that extent. And thus a sugar company in control of the large majority of the manufactories of refined sugar in the United States was exempted from the provisions of the Sherman Anti-Trust Act, since the company's activity was a monopoly on "a necessary of life," *United States v. E. C. Knight Co.*[57] A far cry from *Gibbons v. Ogden!* The result was that when Congress was silent, state legislation could be invalidated as encroaching upon the former's desires even though unexpressed; when Congress spoke, its own legislation could be curtailed as encroaching on the jurisdiction of the states.

And, not only in economic legislation but also in social legislation did the judges apply their new-found power. In *Plessy v. Ferguson,*[58] a state law was upheld that required railway companies carrying passengers in coaches in the state to provide sepa-

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[53] Bowman v. Chicago Northwestern Railway Company, 125 U. S. 465, 520-521, note 51 *supra.*

[54] 135 U. S. 100, 34 L. Ed. 128 (1890). Despite congressional legislation, oleomargarine was, however, afforded different treatment, Plumley v. Mass., 55 U. S. 461, 15 S. Ct. 154, 39 L. Ed. 223 (1894).

[55] 26 STAT. 313, 27 U. S. C. A. 121 (1890).

[56] *In re* Rahrer, 140 U. S. 545, 11 S. Ct. 865, 35 L. Ed. 572 (1891).

[57] 156 U. S. 1, 15 S. Ct. 249, 39 L. Ed. 325 (1895), involving the Sherman Act, 26 STAT. 209, 15 U. S. C. A. 1, et seq. *Cf.* Lorain Journal Co. v. United States, 342 U. S. 143, 72 S. Ct. 181, 96 L. Ed. 162 (1951). Houston v. E. & W. T. R. Co. v. United States, (Shreveport Rate Cases) 234 U. S. 342, 34 S. Ct. 833, 58 L. Ed. 1341 (1914).

[58] 163 U. S. 537, 16 S. Ct. 1138, 41 L. Ed. 256 (1896).

rate but equal accommodations for the white and colored races, whereas a previous statute of the same state requiring carriers to give equal rights and privileges without distinction as to race or color was held, so far as it applied to interstate commerce, void, *Hall v. De Cuir*.[59] In *Hammer v. Dagenhart* [60] a congressional prohibition of transportation in interstate commerce of the work of children was held unconstitutional, while another such provision against the transportation of "white slaves" did not so offend.[61]

CONGRESSIONAL CONSENT

"Congress has undoubted power to redefine the distribution of power over interstate commerce"—Chief Justice Stone in *Southern Pacific Company v. State of Arizona*.[62]

Then in 1917 *Clark Distilling Co. v. Western Md. Ry. Co. and State of West Virginia* [63] sustained a state law, prohibiting importation in interstate commerce of liquor for personal use. If control of interstate commerce were exclusively vested in Congress what was the justification? It was no answer to say that Congress had passed the Webb-Kenyon law [64] divesting the article of its interstate character, for then the power of Congress would be no longer exclusive. It was no answer to say that Congress was aiding the state in the exercise of its police power, for that had been held exclusively to be in the province of the states. The answer is found possibly in *Gibbons v. Ogden*: the power exercised by Congress is a plenary power, which knows no limits other than those prescribed by the Constitution.[65]

The surprise, however, that this decision caused [66] and the surmise as to the source of the theory underlying it [67] may be considered as reflections of the incompatibility of the doctrines of the doctrines of congressional silence and congressional consent. The former is based on a theory of exclusiveness of powers; the latter has its base in the comity of powers. The former presumes that the need assumed by the Supreme Court for a uniform na-

[59] 95 U. S. 485, 24 L. Ed. 547 (1878). This result was obtained by the Court in Plessy v. Ferguson, note 58 *supra*, at 546, limiting the rule of Hall v. De Cuir to interstate as opposed to intrastate commerce, a dichotomy significant perhaps in 1895. *Cf.* Rasmussen v. Idaho, 181 U. S. 198, 21 S. Ct. 594, 45 L .Ed. 820 (1901); Campagnie Francaise v. State Board of Health, 186 U. S. 380, 22 S. Ct. 811, 46 L. Ed. 1209 (1902); Manigault v. Springs, 199 U. S. 473, 26 S. Ct. 127. 50 L. Ed. 274 (1905); Reid v. Colorado, 187 U. S. 137, 23 S. Ct. 92, 47 L. Ed. 108 (1902).

[60] 247 U. S. 251, 38 S. Ct. 529, 62 L. Ed. 1101 (1918); Bailey v. Drexel Furniture Co., 259 U. S. 20, 42 S. Ct. 449, 66 L. Ed. 817 (1922). *Cf.* Corwin, *The Commercial Clause Versus States Rights* (1936).

[61] Hoke v. United States, 227 U. S. 308, 33 S. Ct. 281, 57 L. Ed. 523 (1913).

[62] 325 U. S. 761, 65 S. Ct. 1515, 89 L. Ed. 1915 (1945).

[63] 242 U. S. 311, 37 S. Ct. 180, 61 L. Ed. 326 (1917).

[64] 37 STAT. 699, 27 U. S. C. A. 122 (1913).

[65] Gibbons v. Ogden, 22 U. S. 1, note 31 *supra*.

[66] See Dowling and Hubbard, *Divesting An Article of Its Interstate Character*, 5 MINN. L. R. 100, 253 (1920-21).

[67] Murphy, op cit. *supra* note 18.

tional rule would preclude state action, whether Congress had acted or not; the latter permits Congress to decide to what extent uniformity and diversity should govern. The former makes judges, legislators; the latter makes legislators, judges, for, as has been seen, in many of the instances where such legislation has been enacted, such enactment has been to reverse the Supreme Court.

And because of this, Harlan Stone, while the great proponent of the power of Congress to redefine the distribution of control over interstate commerce, was puzzled as to its source, since he avowedly and frankly was, as a jurist, a great legislator. As a law school dean, he had assigned his staff after the enactment of the Webb-Kenyon Act, the task "of finding out all you can about just how it is that Congress can enable the states to do something which the Court already had held the states could not do—for some day that may be an important doctrine." [68] However, as an associate justice in a dissenting opinion in *Di Santo v. Commonwealth of Pennsylvania*,[69] his objection was not to the propriety of striking down state legislation where Congress had not acted, but in doing so in a situation that he felt called for local treatment rather than a uniform rule:

> The recognition of the power of the states to regulate commerce within certain limits is a recognition that there are matters of local concern which may properly be subject to state regulation . . .

And he added:

> In this case the traditional test of the limit of state action by inquiring whether the interference with commerce is direct or indirect seems to me too mechanical, . . . we are doing little more than using labels to describe a result . . .[70]

All tihs was said by Stone in 1927 when the Court had then become entrenched as the arbiter of when the states had invaded the exclusive jurisdiction of Congress or, conversely, of when Congress had infringed upon matters exclusively the concern of the states. How far had the Court wandered from the guiding hand of Marshall! There followed in the thirties, however, a return to Marshall, for Congress undertook, in aiding the states during the depression years, a federal regulatory program which involved an interpretation of the commerce clause far different from that which would have been conceived possible under *U. S. v. E. C. Knight Co.* and *Hammer v. Dagenhart*. The Court's reaction was immediate, however, and in a series of cases, of which *Carter v.*

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[68] Dowling, *Interstate Commerce and State Power—Revised Version*, 47 COL. L. R. 547, 552, footnote 19 (1947).

[69] 273 U. S. 34, 47 S. Ct. 267, 71 L. Ed. 524 (1927).

[70] *Ibid.*

Carter Coal Company[71] and *United States v. Butler*[72] are 1936 examples, cases which probably precipitated the threat by the President to pack the Court,[73] declared much of the legislative program to be invalid as beyond the reach of congressional commercial power. And then Chief Justice Hughes and Associate Justice Roberts suddenly changed their minds, and, by joining the minority of the Court, Brandeis, Cardozo, and Stone, ruled to the effect that the commerce clause was broad in scope as Marshall had envisioned![74] Why?

> . . . few attributed the difference in results between the decisions of 1936 and those in 1937 to anything inherent in the cases themselves . . . the concensus among lawyers speculating on the Court's sudden reversal was that the Chief Justice and Mr. Justice Roberts believed that the continued nullification of the legislative program . . . would lead to acceptance of the President's Court plan . . .[75]

Whether Hughes bowed to expediency or not, the end result was that very little was left to the states. They were thought incapable of handling the depression, and congressional aid was a complete take-over in detailed regulation often in very local matters. This was the extent of congressional cooperation with the states in the thirties. In the forties, however, the states' fortunes were stabilized by war, Stone had succeeded Hughes as Chief Justice, and under his leadership the states came in as partners again in the complex economy. Stone's dissent in the *Di Santo* case became the majority's view in *California v. Thompson*[76] so as to overrule the former. There he seemed to say that exclusive power did not reside in Congress, and in the absence of its pertinent regulation, the states could regulate. Marshall, in *Willson v. Blackbird Creek Marsh Co.*, was cited by Stone as authority for

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[71] 298 U. S. 238, 56 S. Ct. 855, 80 L. Ed. 1160 (1936), and see Cardozo's dissent at p. 324, 327, commenting on the word "direct"—" . . . a great principle of Constitutional law is not susceptible of comprehensive statement in an adjective."

[72] 297 U. S. 1, 56 S. Ct. 312, 80 L. Ed. 477 (1936).

[73] Stern, *The Commerce Clause and The National Economy*, 1933-1946; 59 HARV. L. R. 645, 681 (1946).

[74] N. L. R. B. v. Jones & Laughlin Steel Corp., 301 U. S. 1, 57 S. Ct. 615, and 81 L. Ed. 893 (1937); Associated Press v. N. L. R. B., 301 U. S. 103, 57 S. Ct. 650, 81 L. Ed. 953 (1937); and Washington, Virginia & Maryland Coach Co. v. N. L. R. B., 301 U. S. 142, 57 S. Ct. 648, 81 L. Ed. 965 (1937), sustaining the Wagner Act, 49 STAT. 449, 29 U. S. C. A. 151, *et seq.* (1935). Interstate commerce probably now includes rainmaking. Notes, 1 STANFORD L. R. 43, 508 (1948-1949); migratory birds, *id.* at 514; and possibly a federal commercial code, Johnson, Comment, 45 MICH. L. R. 1021 (1947).

[75] Stern, *op. cit. supra* note 73. As early as 1913, Hughes apparently felt that the commercial power of Congress was all that Marshall said it was; see The Minnesota Rate Cases, 230 U. S. 352, 399, 33 S. Ct. 729, 57 L. Ed. 1511, involving the INTERSTATE COMMERCE ACT, 24 STAT. 363, 49 U. S. C. A. 11 *et seq.* (1887) and see note 1 *supra*.

[76] 313 U. S. 109, 61 S. Ct. 931, 85 L. Ed. 1219 (1941).

such regulation "unless there is conflict with some Act of Congress;" [77] but then unfortunately, probably unable to resist the role of the Court as a super-legislature, Stone added that this was provided that there is no infringement on the national interest in preserving uniformity in matters of national concern. If any doubt were cast by this momentary insight, his famous decision in the *Southern Pacific* case, an excerpt from which forms a foreword to this part, again emphasized the super-legislative function of the Court:

> For a hundred years it has been the accepted constitutional doctrine that the commerce clause, without the aid of Congressional legislation, thus affords some protection from state legislation inimical to the national commerce, and that in such cases, where Congress has not acted, this Court and not the state legislature is under the commerce clause the final arbiter of the competing demands of state and national interests.[78]

The Chief Justice thus chose not to perceive that the doctrine of congressional silence is at odds with that of congressional consent, express or implied. For the former is founded in the commerce clause itself, and the Supreme Court functioning under such doctrine knows no limitation, since that body has the final say. But what if Congress speaks and takes the place of the Court, is joint federal state action, permitting the states to do that which it could not formerly do; does this combine also transcend the Constitution? Apparently Justice Rutledge, who inherited Stone's philosophic robes as foremost advocate of both doctrines, thought so in 1946 in *Prudential Insurance Company v. Butler*,[79] and this probably accounts for the implications of that decision.

For while the Court had returned to Marshall in his concept of the plenary power of Congress [80] and to his acknowledgment that the federal government might consent to the states' use of the police power so as to affect interstate commerce.[81] Marshall it might well be believed, had no notion, strong an advocate of the power of the Court as he was, that it could act for Congress, when that body was silent.[82] Thus, while the Court returned to Marshall to this extent, the return was only partial. The difficulty is that to retain its powers under the theory of congressional silence is to magnify the position of Congress, as the Court abdicates and the former succeeds in power. The danger of this can most clearly be suggested by *Morgan v. Virginia*,[83] also decided in 1946, wherein the policy of the Supreme Court had changed since the days of

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[77] *Id.* at 114.
[78] 325 U. S. 761, 769, note 62 *supra.*
[79] 328 U. S. 408, note 2 *supra.*
[80] Gibbons v. Ogden, 22 U. S. 1, note 33 *supra.*
[81] *Id.* notes 28 and 29.
[82] Willson v. Blackbird Creek Marsh Co., 27 U. S. 245, note 39 *supra.*
[83] 328 U. S. 373, 66 S. Ct. 1050, 90 L. Ed. 1317 (1946).

Hall v. De Cuir and *Plessy v. Ferguson*, and wherein a state segregation statute was declared invalid since it was a matter, in the silence of Congress, where uniformity was, by the Court, felt desirable. But what then if Congress should adopt state law?[84] Can Congress enable a state to do that which constitutionally it could not do? Or was there ever a question of this? Is not the answer demanded in the negative provided, of course, that it is finally realized that the states' inability substantially to affect interstate commerce, in the absence of congressional legislation, is a court-made rather than a constitutional prohibition?

CONCLUSION

The present position of the Court imposes an intolerable burden on Congress, which since the war particularly has solicited state help on national problems, help which, under *United States v. Darby*[85] and *Phillips Petroleum Co. v. State of Wisconsin*,[86] necessitates express congressional adoption of state law where Congress does not intend to occupy the field. Even more intolerable, however, is the implication of the *Prudential* case: that when such consent is given, both federal and state law are, in some degree, beyond the Constitution. Marshall cannot be blamed for this result, for while he spoke of the "plenary" power of Congress, he never said that the power was almighty. What he did say was that, while Congress might permit a state's participation in national problems, such permission, in every particular, is consent, also subject to the Constitution.[87]

The idea, that in the silence of Congress the Court might act, is false, born in dicta and flashing into decision in an obscure case.[88] The Supreme Court, although returning to Marshall in 1937, nevertheless retained the doctine. To return home part of the way, however, is perhaps still to remain lost.

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[84] Justice Rutledge in the Prudential case, indicated that his remarks were confined to the tax and commercial fields. 328 U. S. 408, 439, note 2 *supra*.

[85] 312 U. S. 100, 85 L. Ed. 609 (1941), validating the FAIR LABOR STANDARDS ACT, 52 STAT. 1060, 29 U. S. C. A. 201 *et seq.* (1938), overruling Hammer v. Dagenhart, note 60 *supra*, and virtually annihilating the Tenth Amendment. Compare, however, Lloyd A. Fry Roofing Company v. Wood, 344 U. S. 157, 73 S. Ct. 204, 97 L. Ed. 168 (1952), a shift from the tendency to hold state statutes invalid where Congress had enacted comprehensive legislation, NATIONAL MOTOR CARRIER ACT, 49 STAT. 543 (1935), as amended, 54 STAT. 919 (1940), 49 U. S. C. A. 301 *et seq.*

[86] 347 U. S. 672, 74 S. Ct. 794, 99 L. Ed. .... (1954), where the Court, reviewing the legislative history of the NATURAL GAS ACT, 52 STAT. 821, 15 U. S. C. A. 717 *et seq.* (1938), overruled the Federal Power Commission, which had declined jurisdiction over "gatherers and producers." *Cf.* Panhandle Eastern Pipe Line Co. v. Public Service Commission, 322 U. S. 507, 68 S. Ct. 190, 92 L. Ed. 128 (1947), where Justice Rutledge, in view of the same legislative history, treated the Natural Gas Act in much the same manner as the McCarran Act, note 3 *supra*. But see Michigan-Wisconsin Pipe Line Co. v. Calvert, 347 U. S. 157, 74 S. Ct. 396, 99 L. Ed. .... (1954).

[87] Gibbons v. Ogden, 22 U. S. 1, note 30 *supra*.

[88] Bowman v. Chicago and Northwestern Railway Co., 125 U. S. 465, note 51 *supra*.

A VIOLATION OF A MUNICIPAL ORDINANCE —IS IT FISH OR FOWL?*

HON. MITCHEL B. JOHNS, *Judge of the Superior Court, City and County of Denver*

And it came to pass that in the Court of General Sessions in the City and County of Denver, on the 20th day of September in the Year of our Lord Nineteen Hundred and Fifty-Five, there was called up for trial before the Honorable Pontius Pilate the case of the City and County of Denver v. John J. Lazarus.

And the Honorable Judge, clothed in the black raiments of his office, saith unto the defendant who stood before him:

"Defendant Lazarus, thou art charged by the City of Denver with the violation of assault, how answerest thee?" And the Defendant sayeth: "I answer *nil debet,* Your Most Worshipful Magistrate."

To which the learned Court replied: "Thou canst not answer thus. Thou must reply *'guilty,* or *not guilty'* as is the wont in such cases."

And Lazarus looketh with fear into the eyes of the noble judge and saith: "How can I answer thee thus? Is it not written in the Book of Law, in the Case of *City of Greeley v. Hamman,* 12 Colo. 94, that a prosecution for the violation of a Municipal Ordinance punishable by fine or imprisonment is not a criminal proceeding, but a civil action in the nature of an action in debt. And has it not been verily said that in reply to an action in debt, one who is not so indebted answereth 'nil debet.' "

And the distinguished jurist saith unto Lazarus: "So it is written in the Book of Law that this is a civil case, and so is it the practice in pleadings to answer thus to an action in debt. But the law giveth and the law taketh away. And in the book to which thou referrest there is not permitted such a reply to the violation of a Municipal Ordinance. Verily thou must plead to the charge, guilty or not guilty."

And Lazarus replieth to the Court: "Thou art learned, and thou art the Judge." And the Judge stateth: "I am the judge."

And Lazarus took unto himself two minutes for deliberation, while the attendants of the Court waited for Lazarus and marvelled at his audacity. And he finally spake unto the Judge on this wise: "This most humble defendant desireth not to affront the dignity of this esteemed Court, but inquireth of the learned Judge if the lowly defendant be permitted to file an answer as is the custom in all well established civil tribunals."

Whereupon the black-robed Judge answereth with finality and saith unto Lazarus: "Thou art permitted no right to formally answer , for it was thus decided by the worthy justices in *Rinn v.*

* Address given by Judge Johns before the Law Club in Denver on September 26, 1955.

Boulder, and it is written in *Dietz v. City of Central,* 1 Colo. 323, that the subtilties of the common law action of debt do not apply to cases of this type."

And the defendant Lazarus looketh earnestly to the Judge and saith unto him: "Likewise, is it not practiced in the law that all actions for violation of Municipal Ordinances are in the name of the Municipality, and actions in crimes in the name of the People?"

And the Judge replieth unto Lazarus, saying: "Lazarus, thou art keen in the ways of the law—so it is practiced in the procedures."

And Lazarus, kneeling, imploreth the Judge: "I am thy ignorant servant, without counsel, and with fear in the premises; how saith thee that for breaches of the ordinances there was brought before the Judges two cases in the name of the People, to-wit: "*People v. Braisted,* 13 Colo. App. 532, and *Davis v. The People,* 47 Colo. 1; thou art learned and sagacious, thou art the Judge. How sayest thee?"

And the Honorable demandeth: "I am the Judge. How pleadest thou, guilty or not guilty?"

And Lazarus, hearing the exhortation, trembled and asked meekly of the Judge: "In the trial in these cases, how balanceth thee the scales? Requireth thou the quantum of preponderance, or the quantum of reasonable doubt?"

And the Jurist replieth: "It has long been established that the rule of preponderance prevaileth."

And Lazarus regardeth the Judge with much apprehension and saith: "My liberty thou mayest deprive, and my property thou mayest take by a preponderance—how then, O Justice, doest thou levy an execution against the body and sell at public sale? The practice of slavery thou are forbidden. Lincoln did so speak, and our fathers have so declared by blood."

And the Judge replieth to Lazarus, "There shall be no selling of the body, for these are the days of enlightenment."

And Lazarus inquireth of the Judge: "How then doest thou do satisfaction—if a fine be duly imposed and I be without funds—hath the plaintiff an empty judgment as is the case in the majority of actions civil?"

And the Judge answereth: "The Chief Justice Steele in 1909 hath declared in *Davis v. People,* in a prosecution for a violation of a Municipal Ordinance, the Defendant may be fined and committed until the fine is paid."

And Lazarus exclaimeth: "Oh, Most Worshipful and Esteemed Magistrate, thou hast stated aforetime that the action is civil and one in debt, and now thou wouldest impound the body. Have not our forefathers in the ages of the past forbidden imprisonment for debt as well as the star chamber, the rack, and the screw? This lowly and uninformed defendant has long so understood the proscriptions. Thou are learned and thou art wise. Explainest thou

that in this modern day a man may be imprisoned for debt—O Learned Judge?"

And the Jurist, casting down his eyes, saith: "Yes, I am the Judge. How answereth thee, guilty or not guilty?"

And Lazarus, gravely and with timidity, sayeth unto the noble Court: "It is spoken in the market place among the debtors that a plaintiff cannot have judgment without proof of damages. How wilt the Court measure proof of damages for assault—if one striketh lightly or heavily—doest thou measure severity on the scales of dollars and cents and in days of imprisonment? How can it be so? And if there be the swearing in of an expert on assault, what shall be the foundation proper for the receipt of the testimony expert? Thou art just. Thou will require proof of damages as in action in debt, O worthy Justice. Thou art learned in the laws of evidence. Thou art the Judge."

And the Honorable Justice Pilate replieth on this wise: "I am the Judge—how sayest thee, Lazarus, guilty or not guilty?"

And Lazarus looketh from side to side and supplicateth unto the Judge: "I beseech thee for a jury, that I may lay before my fellow men my guilt or my innocence."

And the Judge in compassion spake thusly: "Woe unto thee, Lazarus, a jury thou canst not have."

And Lazarus, his eyes large with disbelief, crieth out: "Is it not written in the great book of Constitutions that an accused shall enjoy the right to a speedy and public trial by an impartial jury?"

And the Honorable spake with authority: "A speedy trial thou shall surely have, for the rule has long been provided in *City of Greeley v. Hamman,* 'The public welfare demands a summary and speedy prosecution of offenders against municipal ordinances,' but a jury trial thou shalt not have."

And Lazarus pleadeth: "How can this be? The writing of the Constitution is the fundamental and paramount law of the land—the protection of the individual liberty and life of man—the shield against the onslaught of tyrants and despots. The sages of past times have so recognized and so upheld. Who dareth to strike down these inalienable rights, these guarantees so long preserved? Who dareth?"

And the Judge picketh up the Book of the Law and spake on this wise unto Lazarus, saying: "Hearken unto thee—take heed that ye be not deceived, for much has come to be said in the name of the Book of Constitutions, but little is understood. It was written in the year 1892 by the Justice Helm in *McInerney v. City of Denver,* 17 Colo. 302, on the subject of which thou speakest, and which I now read to you:

> The proposition is urged by counsel that the following offenses against municipal ordinances be prosecuted by jury trial, *viz.:* The injuring or obstructing of streets or alleys, the obstructing or polluting of sewers, the es-

> tablishing of offensive trades or manufactories, assaults, assaults and batteries, disturbance of the peace, unlawful assemblages, riots, routs, indecent exposures, the keeping of gambling houses, of houses of prostitution, soliciting on the street by prostitutes, carrying concealed weapons, disturbances of Sunday worship, bunco and confidence steering, the practice of fakiring devices in fraudulently selling articles on the sidewalk, etc., etc.
>
> It is needless to say that a judicial recognition of the right to a trial by jury in all the local offenses above enumerated, would seriously impair the usefulness and efficiency of city governments. Whatever may be the view concerning the gravity of the offense against a state law, the very fact that the legislature authorizes the city to deal with the same subject by ordinance indicates that to the legislative mind, the act also properly constitutes one of those petty offenses regarded as local injuries. The public welfare, requiring the maintenance of peace and good order as well as of careful sanitary regulations in cities and towns, renders summary proceedings in many cases a necessity. And we are not now prepared to inaugurate the revolution that must follow the announcement of the doctrine that a jury trial is an indispensable prerequisite. It is hardly necessary to say that such a trial is not always essential to "due process of law," or that it is not implied in the principle that every man judicially adjudged against shall have "his day in court".

And Lazarus listeneth intently and spake: "He speaketh much gobbledy gook, and he mentions not the Book of Constitutions."

And the black-robed Judge riseth in his judicial seat and rebuked Lazarus, saying: "Talk not to me of gobbledy gook. Thou speakest in another century. It is demanded of thee this hour. how answereth thou, guilty or not guilty."

And Lazarus spake: "They whittle away at the rights of man. The Book of Constitutions saith that in cases criminal thou shalt not be called to be a witness against thyself. Wilt thou rule, then, that if the worthy City Prosecutor calls me to the stand, by the rule I must answer?"

And the Judge replieth: "The illustrious justices have spoken not on this matter. I will require thee, if called, to state thy name, and permit thee to claim thy privilege."

And it came to pass that with this saying the face of Lazarus lighted up with joy, and he exclaimeth further: "Thou hast a kind and kindred soul, Your Honor, but thou followest not the Rules of Civil Procedure. The action is proclaimed civil, as thou hast said."

Whereupon the Judge instructeth Lazarus more perfectly on this wise: "The Court Supreme hath many times stated that violation of a Municipal Ordinance although civil is also in the nature

of a quasi-criminal proceeding. In *Green v. Denver*, 111 Colo. 390, the learned Justice Jackson pronounceth as follows, even though prosecution for the offense may be in the nature of a civil action, the imposing of a penalty under a muncipal ordinance has the same purpose as the imposition of a penalty under the criminal law."

And with impatience Lazarus remarketh: "It is civil when the wind bloweth east and criminal when the wind bloweth west; how be it in a cyclone? And if it should come to pass that the City Prosecutor with much zeal presenteth his case and this unfortunate defendant standeth convicted before the Honorable Court, hath he no recourse to the echelons judicial?"

And the Jurist spoke with knowledge: "Thou canst appeal to the Court of Superiority."

Whereupon Lazarus inquireth: "And if this lowly defendant convince you most worshipful and judicial self of his innocence, canst the City Prosecutor hie him before the tribunal higher and make him a second time answer to the process?"

And the Justice Pilate knowingly replieth: "This he cannot do, for it was so passed by the Body Legislature in the Session Laws of '53."

And the defendant commenteth wearily: "And so the law travelleth to the side criminal. And in the Court of Superiority, is there provided for the trial by jury, or doth the review consist of the record not recorded? How be it, O Magistrate? I am without knowledge, and slow to learn."

And the Judge, perceiving the dilemma of the lowly defendant, replieth to him with compassion: "In the Court of higher judicial authority there is preserved to thee the right to trial by jury. Thou wilt be granted a trial *de novo*, just as if thou hadst never been tried before this tribunal."

And Lazarus gravely remarketh: "They spend much of the people's money and give a fancy name to twice try an accused. And if thy servant desireth to climb the ladder judicial, and being without monies or property to place security, how sayest the law, is he deprived the right of appeal because he is poor?"

And the Judge, by this time being already much wearied of such questioning, answereth: "In the days of old such was the practice, but it came to pass that on a certain day a poor defendant with children eleven found himself in such plight, and threw himself on the mercy of the Court of Superiority, and prayed that he be allowed his appeal without the posting of bond. And the Judge, having mercy on that much burdened and overworked defendant did permit him to so appeal. And the good legislature looketh down across the commons and saith: 'These things should not be,' and therefore it verily changeth the law in the year of our Lord 1955."

And Lazarus spake unto the Judge on this wise: "It is good." But being in a quandry, inquireth further: "How wilt thou say, O Judge. If I prevail not here and take my cause to the tribunal higher, and impanel a jury, doth the law permit the wind criminal

to blow over the trial so that if I be guilty and confess my sins to the jury and appeal to their passions, doth the law permit the talismen to exercise their compassions and return a verdict of not guilty as is the wont in cases criminal?"

And the Judge answereth the defendant: "Lazarus, thou art learned in the ways of the world, but the law worketh not thus. As it is written in *Lloyd v. Canon City,* 46 Colo. 195, that the cause being civil, the Court hath the power to a verdict direct on a confession given."

And Lazarus respondeth: "Thou hast verily stated, 'The law giveth and the law taketh away.' Thou art learned and wise in the law, distinguished and esteemed Judge. I pray thee, wilt thou explain to thy humble servant how can this be, and yet be denominated by the high justices as criminal on the quasi-extremity. Thou art learned and wise and thou art the Judge. How sayest thee thus?"

And the Judge commandeth: "I am the Judge, how pleadeth thee, guilty or not guilty?"

Whereupon the defendant further emploreth the noble Court: "Of personal liberty the civil law worketh not the severity as in the criminal law. I see many of the clients of the lawyers criminal walk free in the market place, breathing the air in and out. If this poor subject be convicted, wilt thou permit him the right of probation?"

And the Court answereth Lazarus: "Lazarus, thou art searching, but it is not so provided. If thou wert convicted of a crime, probation thou mightest have, but not so in the Courts Municipal. If sentenced there, thou wilt be hied to the dungeon."

And despairingly Lazarus cried out: "The wind changeth."

And the Judge commandeth: "Lazarus, my patience thou hast expended. I hereby demand of thee, guilty or not guilty?"

And thereupon Lazarus spake unto the Judge: "Most worshipful justice, I pray thee, it is provided in the Book of Statutes that if a defendant criminal be fined for his wrong doing and he be a pauper and without means, upon the filing of an affidavit proper he may be relieved. What sayest this proceeding? Wilt thou give the same right to a violator of the by-law ordinance—the civil action?"

And Justice Pilate, with finality spake: "O unfortunate defendant, I make not the law. I interpret and administer the statutes. Abide by them I must, lest I be stricken down with castigation by the great justices. I adjure thee upon the penalty of contempt, thou must reply, guilty or not guilty?"

And Lazarus crieth out, "Thou requireth me to answer to a mutation, an incongruity, a hybrid. It is neither fish nor fowl. Honestly Judge, I answer *nil debet.*"

NOTES AND COMMENTS

CIVIL PROCEDURE: TRIAL OF ISSUES BY IMPLIED CONSENT, NEGLIGENCE AS A DEFENSE TO MUTUAL MISTAKE. The case of *Carpenter v. Hill* seems to have had its inception in a comedy of errors.[1] Plaintiff brought suit for rescission of a contract for the exchange of land on the basis of mutual mistake.

The contract provided for the exchange of a filling station owned by plaintiff for defendant's peach orchard. Apparently in good faith defendant informed plaintiff that the land was subject to a mortgage, but that payments were to be made only out of one-half each year's crop. Actually the entire balance fell due later in that year. Before signing the contract plaintiff went to the bank where the note and mortgage were in escrow and inquired as to the balance due. He did not ask to see the note, although had he done so, his belief in the wondrous crop payment arrangement would have been shattered.

Some time after the completion of the exchange, plaintiff learned the true facts about the payments. This suit for rescission followed. Although defendant pleaded only a denial, the issue of plaintiff's failure to pursue his investigation with due diligence was brought out in the testimony without objection. The trial court rendered judgment for the defendant on the theory that plaintiff's negligence barred his recovery.

On appeal the Court said, "If negligence was a defense, defendants were deprived thereof by failure to file an affirmative pleading." Rule 8(c) provides that any matter constituting an avoidance or affirmative defense must be affirmatively pleaded in order to be available to the defendant.[2] Clearly the decision was correct in holding that the nature of negligence as a defense to mutual mistake is such that it should be specially pleaded.

However, it is possible that the Court overlooked the effect of Rule 15(b) which provides for trial of issues by implied consent. The record in the case discloses that on direct examination of the plaintiff's own witnesses the facts upon which the trial court based its finding of negligence were established. On cross-examination this aspect of the case was developed in detail; hence the rule in question would seem to be applicable.

A long line of federal cases establishes the principle that under this rule issues which are raised during the trial without objection

[1] Carpenter v. Hill, ... Colo. ...., 1954-55 C.B.A. Adv. Sh. No. 11, p. 379.
[2] Colorado Rules of Civil Procedure, 8(c).

are to be treated as though they had been pleaded.[3] Of particular interest is *Swift & Co. v. Young* which said that the doctrine of last clear chance could be introduced in this manner. Likewise in *Rogers v. Union Pacific R.R. Co.* the court ruled that a set-off could be allowed when tried by implied consent saying, "That in itself would require us to treat it as raised by the pleadings."

A number of Colorado cases following this same principle.[4] In the course of the dissent in *Borga v. Hendrickson* mention was made of these results:[5]

> In construing our rule 15(b) we have held that in the absence of motions or objections any issue which the parties see fit to present may be considered and determined by the trial court and that the pleadings become *functus officio.*

Another issue of interest in the instant case was raised by the fact that the decision without any comment quoted section 508 of the *Restatement of Contracts:*

> The negligent failure of a party to know or to discover the facts, as to which both parties are under a mistake does not preclude rescission or reformation on account thereof.

The Colorado Annotation on this section contends that Colorado disagree in theory, but agrees in result by a refusal to recognize negligence in cases of mutual mistake. Three cases are cited in support of this proposition.[6]

Lloyd v. Lowe was an action by the mortgagee of property on which defendant had unintentionally assumed the mortgage. The case is not in point since it was not an action between the parties to the contract, and the plaintiff was merely denied an unintended windfall.

Hitchens v. Milner decided shortly thereafter cited *Lloyd v. Lowe* as authority. The negligence alleged was failure to read before signing a contract which the persons's attorney had prepared. In view of the relationship of trust and confidence between

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[3] Colorado Rules of Civil Procedure, 15(b); Swift & Co. v. Young, 107 F. 2d 170 (4th Cir. 1939); Rogers v. Union Pacific R. R. Co., 145 F. 2d 119 (9th Cir. 1944); Franklin v. Columbia Terminals Co., 150 F. 2d 667 (8th Cir. 1945); Scott v. Baltimore & Ohio R. Co., 151 F. 2d 61 (3rd Cir. 1945); Continental Illinois National Bank & Trust Co. v. Erhart, 127 F. 2d 341 (6th Cir. 1942).

[4] Toy v. Rogers, 114 Colo. 432, 165 P. 2d 1017 (1946); Carlson v. Bain, 116 Colo. 526, 182 P. 2d 909 (1947); Scheller v. Mawson, 117 Colo. 201, 185 P. 2d 1009 (1947); Craft v. Stumpf, 115 Colo. 181, 170 P. 2d 779 (1946); Rose v. Roso, 119 Colo. 473, 204 P. 2d 1075 (1949); U.S. Nat'l Bank v. Bartges, 120 Colo. 317, 210 P. 2d 600 (1949); Rogers v. Funkhouser, 121 Colo. 13, 212 P. 2d 497 (1949); Hopkins v. Underwood, 126 Colo. 224, 247 P. 2d 1000 (1952).

[5] Borga v. Hendrickson, 120 Colo. 303, 209 P. 2d 543 (1949).

[6] Lloyd v. Lowe, 63 Colo. 288, 165 P. 609 (1917); Hitchens v. Milner Land, Coal and Townsite Co., 65 Colo. 597, 178 P. 575 (1919); Home Insurance Co. v. Gaines, 74 Colo. 62, 218 P. 907 (1923).

attorney and client it may well be true that there was no negligence.

Home Insurance Company v. Gaines was a case in which the defense presented to the court was laches rather than negligence. In addition each of the these cases is distinguishable from the instant case by the fact that no independent investigation was undertaken and left half-finished. More in point is an early case in which plaintiff sought to rescind a conveyance of more acres than he had intended.[7] It developed that prior to the conveyance he had assisted in making a survey of the land and easily could have ascertained the results. It was held that this neglect prevented his recovery.

Similar facts were present in a recent case which reached the same result.[8] Defendant's agent innocently misrepresented to plaintiff the extent of the boundaries of some lots in Denver. Plaintiff made his own measurement of the frontage on the property, but neglected to measure the depth which had been misrepresented. The court held that this negligence was a defense to a suit for rescission brought after he had acquired the property. Comparison of that case with the instant case reveals that on similar facts, but on different theories, opposite results were reached. This fact prompts a comparison between the two theories —one in contract, the other in tort.

Negligence is almost uniformly held to be a defense against misrepresentation, and under certain circumstances, such as where the means of knowledge is equally available to both parties, it is a defense to deceit.[9] For an action based upon misrepresentation the plaintiff must prove that he relied upon the falsehood. It is also essential that the plaintiff be justified in so relying, and it is on this basis that negligence is held to be a defense.

Turning to an examination of the cases on mutual mistake, it is discovered that while there is much language in the decisions to the effect that "one must bear the consequences of his own folly"[10] the courts are becoming less insistent upon this maxim.[11] But where special circumstances exist such as a failure to take ad-

[7] Wier v. Johns, 14 Colo. 493, 24 P. 262 (1890).

[8] Taylor v. Arneill, 129 Colo. 185, 268 P. 2d 695 (1954); noted in 27 Rocky Mtn. L. Rev., Dec., 1954, p. 115.

[9] Hanks v. McNeil Corp., 114 Colo. 478, 168 P. 2d 256 (1946); Pestal v. O'Donnell, 81 Colo. 202, 254 P. 2d 764 (1927); Troutman v. Stiles, 84 Colo. 597, 290 P. 281 (1930); Slide Mines v. Denver Equipment Co., 112 Colo. 285, 148 P. 2d 1009 (1944); Bosick v. Youngblood, 95 Colo. 532, 371 P. 2d 1119 (1934); Emerson-Brantingham Co. v. Wood, 63 Colo. 130, 165 P. 263 (1917); Jasper v. Bicknell, 62 Colo. 318, 162 P. 144 (1916); Sellar v. Clelland, 2 Colo. 532 (1875); 2 Pomeroy's Equity Jurisprudence (4th ed.) sec. 893. But *cf.* Pattridge v. Youmans, 107 Colo. 122, 109 P. 2d 646 (1941).

[10] Grymes v. Sanders, 93 U.S. 55 (1876); Roller v. California Pacific Title Ins. Co., 206 P. 2d 694; Muchow v. Central City Gold Mines Co., 100 Colo. 58, 65 P. 2d 702 (1937).

[11] Corbin on Contracts, sec. 606.

vantage of a readily accessible means of knowledge,[12] failure to carry forward an investigation which had been commenced, or a situation in which the parties could no longer be restored to the status quo,[13] negligence is still a valid defense. Thus it would seem that in tort actions where some degree of culpability is usually involved, the negligence of the plaintiff is more often successful as a defense than in actions for mutual mistake where the defendant's good faith is assumed. This marvelous anomaly deserves further study.

At any rate, in the instant case strong equities urge the adoption of the trial court's findings. Where the means of ascertaining the truth was readily at hand, plaintiff commenced an investigation. The trial court found that he failed to carry it through with reasonable diligence. Since the mortgage had been foreclosed, the parties could no longer be restored to the status quo. A judgment for damages resulted against a defendant who had been acting in good faith in favor of a negligent plaintiff. The Court easily could have arrived at a more desirable result had it applied Rule 15(b).

WILLIAM E. KENWORTHY.

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[12] Muchow v. Central City Gold Mines, *supra;* Eitel v. Alford, 127 Colo. 341, 257 P. 2d 955 (1953).

[13] Grymes v. Sanders, *supra;* Corbin on Contracts, *supra.*

Notes from the Secretary

(Continued from Page 372)

CANON 8. ADVISING UPON THE MERITS OF A CLIENT'S CAUSE

A lawyer should endeavor to obtain full knowledge of his client's cause before advising thereon, and he is bound to give a candid opinion of the merits and probable result of pending or contemplated litigation. The miscarriages to which justice is subject, by reason of surprises and disappointments in evidence and witnesses, and through mistakes of juries and errors of Courts, even though only occasional, admonish lawyers to beware of bold and confident assurances to clients, especially where the employment may depend upon such assurance. Whenever the controversy will admit of fair adjustment, the client should be advised to avoid or to end the litigation.

OPINION 82—A lawyer may bring an action for divorce when necessary grounds exist irrespective of the underlying cause; and he may advise against reconciliation if he believes it to be against the best interests of his client.

CANON 9. NEGOTIATIONS WITH OPPOSITE PARTY

A lawyer should not in any way communicate upon the subject of controversy with a party represented by counsel; much less should he undertake to negotiate or compromise the matter with him, but should deal only with his counsel. It is incumbent upon

the lawyer most particularly to avoid everything that may tend to mislead a party not represented by counsel, and he should not undertake to advise him as to the law.

OPINION 58—It is improper for a lawyer to confer with the adverse party for the purpose of securing an agreement to a divorce.
OPINION 108—It is improper to interview an adverse party who is represented by counsel, in the absence of such counsel.
OPINION 124—A lawyer may not negotiate a settlement with the adverse party without the knowledge of the adverse counsel.